KU LEUVEN

DOCTORAL SCHOOL of
BIOMEDICAL SCIENCES

Wish to Die in the Twilight of Life

An explorative study on age-specific psychological factors determining the wish to die and suicidal thoughts and behaviours in older adults

Anke Bonnewyn

Dissertation presented in partial
fulfillment of the requirements for the
degree of Doctor in Biomedical Sciences

June 1st 2016

KU Leuven
Biomedical Sciences Group
Faculty of Medicine
Department of Neurosciences

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AN EXPLORATIVE STUDY ON AGE-SPECIFIC PSYCHOLOGICAL FACTORS DETERMINING THE WISH TO DIE AND SUICIDAL THOUGHTS AND BEHAVIOURS IN OLDER ADULTS

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The studies in this dissertation thesis were funded by an unrestricted educational grant by Eli Lilly Belgium.

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“Mourir cela n'est rien
Mourir la belle affaire
Mais vieillir... ô vieillir!”

Jacques Brel

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LIST OF ABBREVATIONS

AMB: Ambivalent towards the Wish to Live and the Wish to Die

AS: Assisted Suicide

CI: Confidence Interval

DV: Dependent Variable

EU: Euthanasia

GTA: Grounded Theory Analysis

IV: Independent Variable

MDE: Major Depressive Episode

SA: Suicide Attempt

SI: Suicide Ideation

STB: Suicidal Thoughts and Behaviours

WTD: Wish to Die

WTL: Wish to Live

CHAPTER 1

INTRODUCTION, OBJECTIVES, AND OVERVIEW OF THE DOCTORAL THESIS

CHAPTER 1. INTRODUCTION, OBJECTIVES AND OVERVIEW OF THE DOCTORAL THESIS

1.1 Introduction

Suicide in later life is an important health problem given the high rates of late life suicide in industrialized countries. Suicide rates are at least as high in older age groups as in younger groups; especially men over 75 years old are vulnerable (McKeown et al., 2006). Suicide rates of older people in Flanders (Belgium) are comparable to other industrialized countries. Between 2005 and 2009, mean yearly suicide rates of 23.65 (age group 60-74 years) and 28.16 (age group 75+years) per 10,000 people have been reported (http://www.zorg-en-gezondheid.be/Cijfers/Sterftecijfers/Cijfers-oorzaken-van-sterfte/Zelfdoding-per-leeftijd).

The ratio of suicidal thoughts and behaviours (STB)[1] changes by ageing: despite the high completed suicide rates in later life, older age is characterized by a decrease in the reporting of suicidal ideation (Duberstein et al., 1999) and in the rates of suicide attempts (Hawton and Harriss, 2008). The ratio of suicide attempt versus completed suicide in older populations is estimated to be 4:1 (Hawton and Harriss, 2008, McIntosh, 1992) and up to 75% of older adults die on their first attempt (Conwell et al., 2002). Although hypotheses have been formulated to explain this changed ratio, a conclusive explanation has not been put forward yet. Some explanations have been mentioned however. For instance, the increased rate of completed suicides could be explained by the enhanced lethality of suicide attempts due to poorer physical condition and social isolation of older adults. The decrease of suicidal ideation by age might be ascribed to a cohort effect: the current generation of older adults is less inclined to express feelings (Duberstein et al., 1999). A more general explanation reflects on a more genuine wish of the older people to be dead when they attempt to commit suicide. Later life is a time of life often characterized by the experience of accumulated losses for the older individual and the awareness that death is inevitable and that one moves inexorably closer to it, becomes more prominent through the process of ageing (Maxfield et al., 2007). These factors may explain the changing ratio of STB by ageing. Even if the rates of suicidal ideation and suicide attempts decrease, they should still be considered as strong risk factors for subsequent suicide and non-suicide mortality (Bergen et al., 2012, Batterham et al., 2013).

[1] STB is the abbreviation of “suicidal thoughts and behaviours”. This term incorporates the broad range of manifestations of the suicidal spectrum, including wish to die (wish to be dead either in a passive or an active way), death ideation (thoughts of death by passive means), suicide ideation (thoughts on ending one’s life), suicide plan, suicide attempt, and completed suicide.

The presence of suicidal ideation is also known to reduce the quality of life (Kerkhof, 2012).

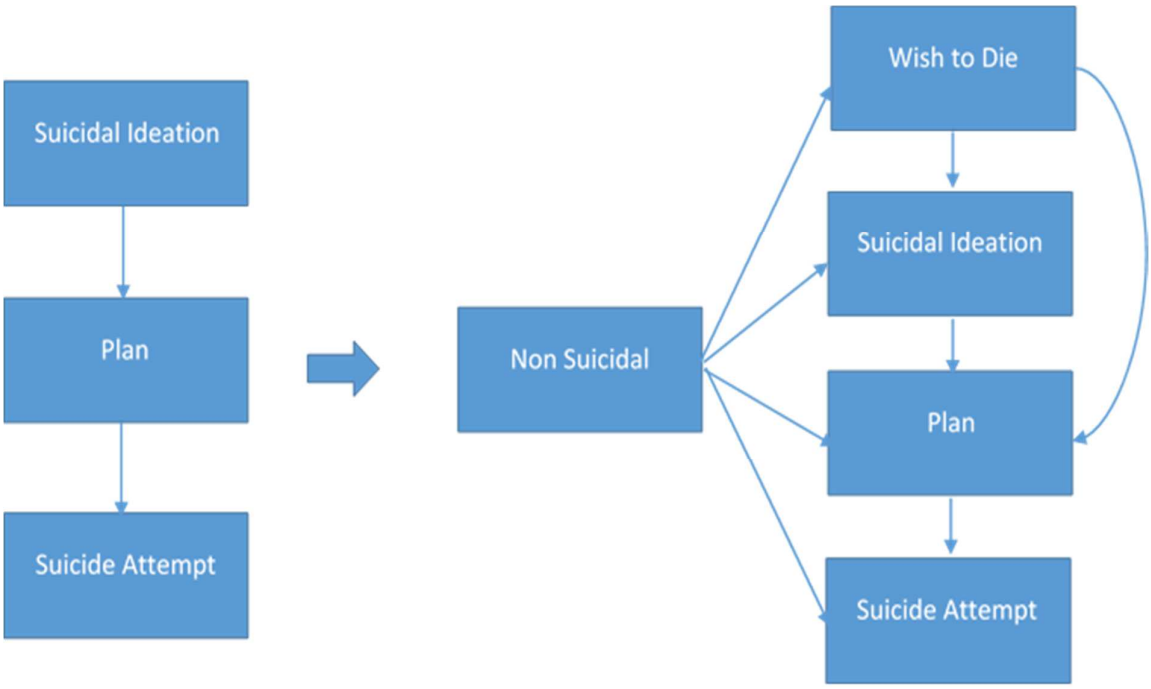
Research on STB in older people is significantly less exhaustive than research available for other age groups. In the last two decades however, a boom in interest has resulted in the identification and discussion of a number of established correlates which play a role in the onset of STB at older age. First, a number of independent risk factors have been identified for STB in later life: mental disorders (with affective disorder as the most robust predictor), physical illness, significant functional impairment, pain, and bereavement (Conwell et al., 2002). Second, protective factors have been explored as well, pointing to specific reasons for living and to particular attitudes towards suicide: social connectedness and religion have a protective function in the onset of STB in later life (Miller et al., 2001). Third, psychological factors have been included in the last years to investigate the onset of STB in later life, because the aforementioned correlates interact with individual features in the onset of STB. Personality traits can be related to different manifestations of STB, implying on the one hand the important contribution of psychological factors, and on the other hand the significance of personality factors in distinguishing different manifestations of STB (e.g. (Heisel et al., 2006, Duberstein et al., 2000)). Fourth, neuropsychological impairment is associated with STB in later life, as demonstrated by poorer performance on cognitive tasks measuring executive functioning (e.g. (Dombrovski et al., 2010)).

1.2 Research Gaps

Despite the progressive investigations on suicide in later life during the last decade, the nature of the suicidal diathesis in late life still remains poorly understood and research to date shows important weaknesses. First, it remains unclear why only a minority of the older adults with risk factors, effectively develop STB. Although several correlates of STB in later life have been identified, these risk factors seem to be necessary components in the onset of STB, but they do not explain the development on their own: the risk factors trigger STB only in a small fraction of exposed older adults. From this perspective, it is important not only to investigate less frequently studied variables, but also to integrate different types of variables in multivariate models, including psychiatric, neuropsychological, psychological and personality factors, in order to explain the onset of STB in later life. Second, research to date has only identified stable, fixed factors associated with STB. Psychological variables, which are dynamic in nature and which are specific to old age, may possibly mediate between risk

factors and the onset of STB, but this has been underinvestigated. Third, the majority of research has focused on objectively ascertained suicidal behaviours (such as completed suicide and suicide attempt). Less overt manifestations of STB, such as the wish to die (WTD) and suicide ideation, are investigated to a much lesser extent. Fourth, the common known continuum model of suicide (attempt) risk can be questioned (see figure 1). Recent research studies suggest that the traditional conceptualization does not represent the real relationship between different STB. For example, suicide ideation is considered to be a risk factor of completed suicide, but recent studies indicate that a wish to die as well as death ideation (which is not uncommon among older adults) might be important predictors of future suicide attempt and completed suicide (e.g. (Baca-Garcia et al., 2011) as well. Research on the wish to die and on death ideation in older adults is limited: for example, it is unclear when death ideation might be considered as a natural phenomenon of normal ageing and when it must be considered as a symptom of psychopathology and/or as part of the suicidal process (Szanto et al., 2013).

Figure 1. Traditional continuum model versus multiple pathways model for risk of suicide (attempt). Adapted from "Estimating risk for suicide attempt: Are we asking the right questions? Passive suicidal ideation as a marker for suicidal behaviour," by E. Baca-Garcia et al., 2011, Journal of Affective Disorders, 134, p.328. Copyright 2011 by Elsevier B.V.



1.3 Conceptual outline of the thesis and research questions

The overall aim of this doctoral project was to deepen the understanding of the onset of STB in older adults. In reviewing the existing literature on the onset of STB in older adults, we identified on the one hand a lack of age-specific psychological risk factors in predicting STB in older adults and on the other hand a lack of guidance to make predictions about the transitions between the different manifestations of suicide. Therefore we designed a doctoral project exploring different types of correlates of STB in later life, including psychiatric, psychological, and age-specific factors. A mixed methods research design was used to address this overall aim. More specifically, this project aimed:

Research Questions:

1. To provide a review of research literature on STB in later life **(Research Question 1)**.
2. To explore, by means of a pilot-study with a qualitative research design, how suicidal patients experience their STB and to identify the contributing factors to the onset of STB in later life **(Research Question 2)**.
3. To construct univariate and multivariate regression models predicting a wish to die in older patients, with inclusion of psychological variables (related to the process of ageing) (quantitative study) **(Research Question 3)**.
4. To investigate whether different manifestations of STB (dependent variable) should be considered as distinctive categories (quantitative study) **(Research Question 4)**.

The collected data had a retrospective, self-report character. In figure 3 (as an appendix to this chapter), the research questions are presented in a scheduled way.

1.4 Material and methods

The aims of the project were operationalized in three separate studies: a) a comprehensive review study of the literature (research question 1); b) a qualitative study (research question 2); c) a quantitative study (incorporating research questions 3 and 4). A broad range of material and methods (mixed methods research design) was used in congruence with the exploratory character of the study.

1.4.1 Comprehensive review of the literature

We identified relevant studies published in 2000-2009 in order to critically review the literature on STB in later life by searching MEDLINE and PSYCINFO using the mesh terms “suicide”, “suicidal”, “suicide ideation”, “death wish”, “death ideation”, “deliberate self-harm” or “suicide attempt” and “elderly”, “older”, “old age” or “later life”. Different manifestation of STB were considered and special attention was paid to the method of assessment. First, prevalence rates, risk and protective factors were mapped out. Second, psychological and neuropsychological correlates were reviewed. Third, the association between STB and help-seeking was considered. Fourth, potential prevention strategies were reviewed.

1.4.2 Qualitative study

Study set-up

By means of a pilot-study with a qualitative research design, we aimed to explore *how* older adults consider and/or experience STB in order to identify the contributing factors to the onset of STB in later life and to better understand the development of STB over time. In order to optimize the confirmability of the study, we incorporated multiple perspectives by including data from three different patient groups. The ground of selection was based on purposive sampling: cases were selected because they illustrated some features of a process in which we were interested. Three research groups were defined as follows:

Group 1: In depth-interviews with INDIVIDUAL older inpatients WITH A SUICIDE ATTEMPT.

Older inpatients (60 years and over) who had made a suicide attempt one month preceding the interview were the target sample. Assuming that elderly who recently made a suicide attempt experienced different manifestations of STB, they were selected in order to understand the different stages of STB. In depth-interviews were conducted with following research questions as central themes:

Research Questions	Interview Questions
Which factors and/or psychological concepts can be related to the development of suicidality?	Which factors and/or psychological concepts, do you think, have contributed to the development of suicidality?
How are different manifestations of STB related to each other? Did patients experience different stages in the development of suicidality? Which stages can be differentiated? Can these stages be situated along an individual sequential continuum? What did make patients move from one stage to another?	Have you noticed different stages in your experience of suicidality? What has made you tip over from one stage to another? Can you map out these different stages in chronological order?

Older inpatients were recruited from the Old Age Psychiatric Unit, UZ Leuven / St. Goedele UPC Kortenberg /UPC KULeuven. Interviews were conducted in 2009-2010.

<u>Group 2</u>: FOCUS GROUP of older inpatients experiencing STB.

Older inpatients (60 years and over) who had experienced some form of STB in the past year were selected in order to understand whether and how different manifestations of STB can occur and which factors were involved in the onset of these. This focus group consisted of eight persons. Themes of this focus group were described in the following topic guide:

Topic Guide
Which factors and/or psychological concepts can be related to the development of suicidality?
How are different manifestations of STB related to each other? Did patients experience different stages in the development of suicidality? Which stages can be differentiated? Can these stages be situated along an individual sequential continuum? What did make patients move from one stage to another?
What are patients' points of view on suicide as a form of personal control over one's life? In which way is suicide related to or different from a request for euthanasia?

Inpatients were recruited from the Geriatric Psychiatric Unit, UZ Leuven.

<u>Group 3</u>: In depth-interviews with INDIVIDUAL older inpatients with an IDENTIFIED PHYSICAL ILLNESS.

The target sample comprised older inpatients (60 years and over) who had been diagnosed with a physical illness (organic mental disorder excluded), but who were not identified as experiencing a level of STB. Started from the assumption that the presence of a physical

illness is a robust risk factor to develop STB in later life, in depth-interviews were conducted with following research questions as central themes:

Research Questions	**Interview Questions**
How is STB being considered by an older person who suffers from physical illness?	What is your personal view on STB?
What might tip the balance from non-suicidality to STB in later life?	What might tip the balance from non-suicidality to STB in your life?
Which factors and/or psychological concepts can be related to the onset of STB?	Which factors and/or psychological concepts can be related to the onset of STB?
Are there some stages which can be discerned in the onset of STB? Which stages can be differentiated? Can these stages be situated along an individual sequential continuum? What do make people move from one stage to another?	Are there some stages which can be discerned in the onset of STB? Which stages can be differentiated? Can these stages be situated along an individual sequential continuum? What do make people move from one stage to another?
How do patients regard suicide as a form of personal control over one's life? In which way is suicide related to or different from a request for euthanasia?	What is your personal view on completing suicide as willing to take personal control over life? In which way is suicide related to or different from a request for euthanasia?

The inpatients were recruited from the Geriatric Unit, UZ Leuven. Interviews were conducted until theoretical saturation is reached.

Data of the second and third patient group did not produce qualitatively sound data. Interview data of the focus group (GROUP 2) were information-poor, too broad and not focused. Although selection of sampling was based on purposive sampling and theoretically 'information-rich' cases were selected, patients did not seem to feel safe enough to talk in a group discussion about delicate subjects like the presence of a wish to die or suicide ideation. Due to the heterogeneity of the sample of the focus group, participants did not pick up on the points made by others, although they were explicitly invited to do this. Therefore, interview data remained superficial. The non-suicidal participants (GROUP 3) expressed a feeling of not being in touch with the theme of suicide and STB in later life. Interviews were characterized by high resistance to talk about this subject. We therefore made the decision to focus only on the data obtained or to obtain additional data from patients who attempted to complete suicide. The text hereunder on qualitative data therefore refers exclusively to the latter group (GROUP 1).

Data collection

Data were gathered by means of in-depth interviews with older psychiatric inpatients (aged 60 years and over) who attempted suicide. Respondents were recruited from the department of old age psychiatry (University Hospitals Leuven, Belgium). Recruitment was based on purposeful sampling of information-rich cases (criterion sampling): older inpatients with a

recent history of a suicide attempt who were assessed by the multidisciplinary team of the ward as being able to reflect on and provide rich information about their decision process towards the SA. Respondents with a score below 24 on the Mini Mental State Examination (MMSE) (Folstein et al., 1975) were excluded from the study. Interviews took place within 30 days following the suicide attempt, were audio-visually recorded and took 45 to 115 minutes. Afterwards, all interviews were transcribed verbatim and imported into NVIVO to assist with data management (2008). Data collection and analysis were performed simultaneously and additional interviews were conducted until theoretical saturation was reached.

Ten patients were invited to participate in the study, eight patients effectively participated, one person refused and one person who initially agreed, reported cognitive complaints as a side effect of electroconvulsive therapy. All patients provided their informed consent. The study was approved by the University Hospital's Ethical Review Board (S51758).

The Suicide Intent Scale (SIS) (Beck et al., 1974a) was administered to determine the suicidal intent of the suicide attempt. Only the first 15 of the 20 items on this scale are scored on a range of 0-2, with a total score range of 0–30. Higher scores imply higher suicidal intent.

Grounded theory analysis (GTA) was used to analyse the transcripts. GTA was originally developed by Glaser and Straus (Glaser and Strauss, 1967) as a general method for developing a theory that is grounded in systematically gathered and analysed data. Rather than testing pre-existing theoretical suppositions or hypotheses, GTA is emergent: its aim is to develop categories from the data leading to generating theory grounded in the data. GTA is considered to be a good method for an initial exploration of an under-theorized domain (Burck, 2005, McLeod, 2001).

Data Analysis

The coding process was divided in two phases: substantive and theoretical coding. In the first phase of substantive coding, a line-by-line coding of the data was conducted. Each line of the manuscripts was coded, keeping as close as possible to the data. The next step involved focused coding where larger segments of the text were coded in a more conceptual way (Glaser, 1978). Focused coding was given analytical direction by the initial line-by-line coding. 'Constant comparative methods' (Glaser and Strauss, 1967) were used, constantly comparing meaning units and categories for similarities and differences. In the second phase

of ‘theoretical coding’ (Glaser, 1978), relations between substantive codes were conceptualized in theoretical codes in order to integrate these into one theory. This resulted in a list of categories and subcategories, organized in a hierarchical structure, where lower order categories were properties or instances of higher order categories. These categories formed the general formal framework of the theory.

Rigor and trustworthiness

Transcripts were independently coded by two researchers to increase the credibility and conformability of the coding system. Codes and categories were compared; similarities and discrepancies were reviewed and decisions in the process of substantive and theoretical coding were subject of discussion. Final decisions with regards to these coding discussions were taken together with a third researcher in order to resolve challenging cases which did not fit entirely in the coding system.

1.4.3 Quantitative Study

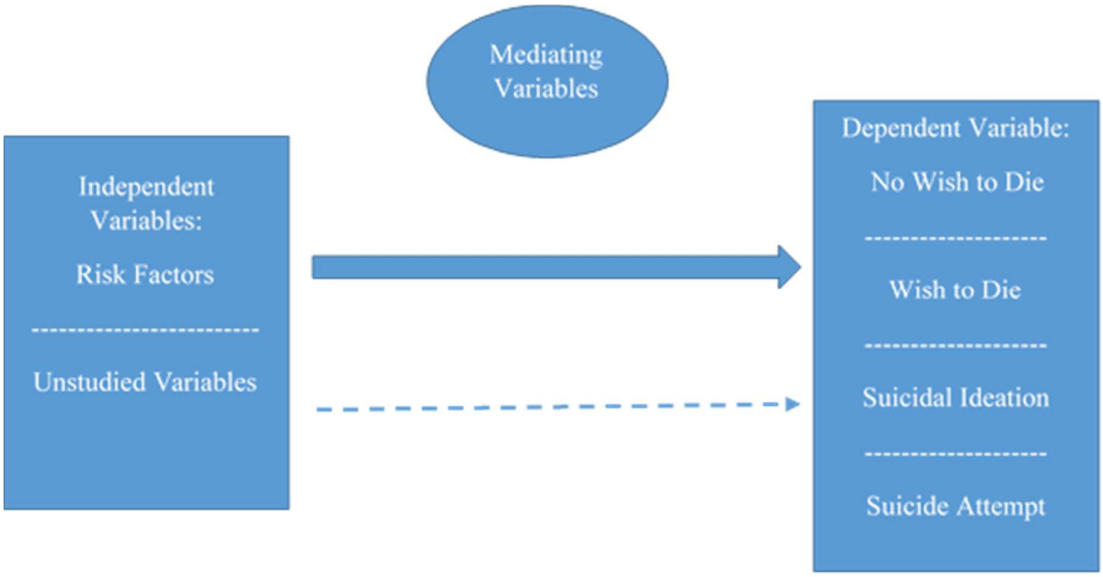
Inclusion of patients

Since both somatic disorders and mental disorders were found to be robust risk factors for STB in later life, all patients (aged 60 years and over) admitted to the medical wards of Internal Medicine (May 2011 – January 2012), in the wards of Old Age Psychiatry of the University Hospital Leuven (UPC KU Leuven), of PZ Broeders Alexianen Tienen, and of M.C. St.–Jozef Munsterbilzen, (May 2011 – May 2013) were invited to participate in this cross-sectional study. 164 patients in total were invited to participate in the study, 51 individuals refused to take part. Cognitively impaired (a score of 24 or below on MMSE) and psychotic inpatients were excluded from participating in the study. A total of 113 patients (72 psychiatric inpatients, 41 somatic inpatients) provided their informed consent and completed all study questionnaires. The study was approved by the University Hospital’s Ethical Review board (S52434),

Study variables

We operationalized the third and the fourth research questions of this doctoral study by exploring the relationships between independent and dependent variables in the following way (figure 2).

Figure 2. Quantitative study set-up in terms of different variables.



In the following paragraphs we describe the operationalization of the independent and dependent variables.

Independent variables[2]

Sociodemographic variables were gender, age, marital status (married – widowed – divorced – single), living arrangement (living alone – living together), educational level, number of children, hospital setting (ward), and date of admission.

Mental disorders were assessed by means of the SCID-I, the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; SCID v2.0 (First et al., 1997)); a semi-structured clinical interview designed to assess Axis I disorders based on DSM-IV criteria. It is considered to be the gold standard assessment instrument for mental disorders. Major depressive episode (12 months) and anxiety disorder (12 months) (including social phobia, generalized anxiety disorder, panic disorder, agoraphobia, and specific phobia) were assessed. The inter-rater reliability varies from adequate to excellent (Zanarini and Frankenburg, 2001). To assess the **severity of the**

(2) Given the exploratory character of the quantitative study, we opted to omit the variables in the multivariate models, showing a non-significant binary correlation with the dependent variable, as described in the following chapters. For the fullness and openness of the report of the doctoral study in this first chapter, we chose to describe the exhaustive questionnaire which was administered to the patients.

depressive symptoms, the MADRS (Montgomery Asberg Depression Rating Scale (Montgomery and Asberg, 1979)) was administered. This 10-item clinician rating scale where items are rated from 0 (none) to 6 (severe) assesses depressive symptoms. It has good interrater-reliability (ICC=0.89 to 0.97) (Montgomery and Asberg, 1979) and good internal consistency (α=0.86) (Maier and Philipp, 1985).

Life events were assessed by means of the GALES (Geriatric Adverse Life Events Scale (Devanand et al., 2002)). This scale evaluates 26 acute, adverse life events that are commonly experienced by older adults.

Pain was measured by a VAS (Visual Analogue Scale) and the presence of a somatic disorder was based on a self-report. Patients were asked whether a physician has ever told them that they had 1) a heart attack, 2) a stroke; 3) a cancer or tumor of any type; 4) diabetes, high blood sugar; 5) a broken or fractured hip or 6) a bone fracture since the age of 50. This assessment is similar to the assessment used by Turvey and colleagues (Turvey et al., 2002).We administered the instrumental Activities of Daily Living Scale (Lawton and Brody, 1969) to asses **functional limitations**, which has an estimated inter-rater and test-retest reliability of 0.99 and 0.90, respectively. The Cronbach's alpha estimating the internal consistency was 0.86. **Sleep and somatic symptoms** were assessed by two subscales of the SCL-90 (Symptom Checklist (Derogatis et al., 1973)). Psychometric evaluations reports have indicated good internal consistency (alpha coefficients .77 to .90), good test–retest reliability, and good concurrent, construct, and discriminant validity (Derogatis, 1983, Derogatis et al., 1976).

We made use of the BHS (Beck Hopelessness Scale (Beck et al., 1974b)) which is the widely used standardized measure of **hopelessness**(3) (Glanz et al., 1995). It is a 20-item scale with a true–false response format (nine items are keyed false, eleven true); each response is summed to give a severity rating ranging from 0 to 20, with high scores indicating the presence of hopelessness. It has strong internal consistency.

Social support was measured by the MSPSS (Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)). The MSPSS is a 12-item scale which assesses perceptions of social support adequacy received from family, friends and a significant other. The significant

(3) In multivariate analyses predicting STB including both MDE and 'hopelessness', the contribution of 'hopelessness' was non-significant. Given the relatively small sample size, we opted to omit the variable 'hopelessness' in multivariate analyses.

other may refer to any person, not necessarily a spouse or a romantic partner. Items are rated on a 7-point scale where 1 corresponds to disagreeing very strongly and 7 corresponds to agreeing very strongly. Good internal reliability and strong factorial validity was found, confirming the three subscale-structure (family, friend, significant other) (Zimet et al., 1990).

Religiousness was assessed by means of the DUREL-index (Duke University Religion (Koenig et al., 1997)). This index is used in psychiatric research to assess religiousness. It is a five-item questionnaire that asks about the frequency of religious attendance or of participation in private religious activities and about intrinsic religiousness. The instrument demonstrated good internal consistency and moderate to good convergent validity (Sherman et al., 2000).

Attitudes of or perception on life and death were assessed by several questionnaires. We administered the RFL (**Reasons for Living** (Linehan et al., 1983)) which is a questionnaire assessing potential reasons for not committing suicide. Factor analysis yielded six subscales: Survival and Coping beliefs, Responsibility to Family, Child Concerns, Fear of Suicide, Fear of Social Disapproval, and Moral Objections (Linehan et al., 1983). The validity of the RFL is supported broadly (Osman et al., 1993). **Death attitudes** were assessed by means of DAP-R (Death Attitudes Profiles-R (Gesser et al., 1987)). Research indicated that the DAP-R has good psychometric qualities in terms of factor structure and reliability and shows good external validity (Wong et al., 1994). **Life Satisfaction** was measured by means of LSI-A (Life Satisfaction Index-A (Neugarten et al., 1961)). Adequate reliability of the LSI is reported (Wallace and Wheeler, 2002). Finally, the **Life Attitude** Profile-Revised (LAP-R) is a multidimensional measure of global meaning, i.e. the degree of existential meaning and purpose in life and the strength of motivation to find meaning and purpose (Reker, 1992). It consists of 48 items, all scored on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree”. The LAP-R has good psychometric qualities in terms of factor structure and reliability and shows good concurrent and discriminant validity (Reker, 1992).

The questionnaire PMS (Pearlin Mastery Scale (Pearlin and Schooler, 1978)) as a measure of **Mastery** was administered to assess the extent by which individuals consider themselves to be in control of their own lives. The internal consistency was estimated to be 0.77 (Kempen et al., 1999). **Personality characteristics** were assessed by NEO-PI-R (NEO-Personality Inventory-R). The internal consistency and convergent and divergent validity of the Dutch

version of the scale has been demonstrated to be good (McCrae and Costa, 2003). **Alexithymia** was assessed by TAS-20 (Toronto Alexithymia Scale (Bagby et al., 1994a)). TAS-20 is most widely used as a measure of alexithymia and is the most carefully validated. Its internal consistency, test-retest reliability, and convergent, discriminant and current validity have been demonstrated to be good (Bagby et al., 1994b, Bagby et al., 1994a, Parker et al., 2003, Taylor et al., 2003).

Dependent variables

STB was assessed by means of the BSSI (Beck Scale for Suicide Ideation (Beck et al., 1988, Beck and Steer, 1991). The BSSI is a self-report inventory with strong reliability and validity which includes a broad range of manifestations of suicidality, e.g. death ideation, suicide ideation. It is a 21-items measure of which only the first 19 are scored. The final two items are used to record previous suicide attempts. All items consist of three response options, ranging from 0 to 2. The time frame is the week preceding the interview. The first items serve as an initial screening of suicide ideation. We listed the first items of the BSSI as example items in table 1.

Table 1. Example items of the BSSI.

ITEM 1
0: I have a moderate to strong wish to live.
1: I have a weak wish to live.
2: I have no wish to live.
ITEM2
0: I have no wish to die.
1: I have a weak wish to die.
2: I have a moderate to strong wish to die.
ITEM 3
0: My reasons for living outweigh my reasons for dying.
1: My reasons for living or dying are about equal.
2: My reasons for dying outweigh my reasons for living.
ITEM 4
0: I have no desire to kill myself.
1: I have a weak desire to kill myself.
2: I have a moderate to strong desire to kill myself.

The SIS(4) (**Suicide Intent Scale** (Beck et al., 1974a)) was administered to patients with a suicide attempt. The SIS is an instrument using 15 items designed to examine the factual

(4) Given the small number of patients with a SA in the sample, data of the SIS were not included in the statistical analyses.

aspects of the suicide attempt, the patient's thoughts and feelings as well as the circumstances at the time of the suicide attempt.

Statistics

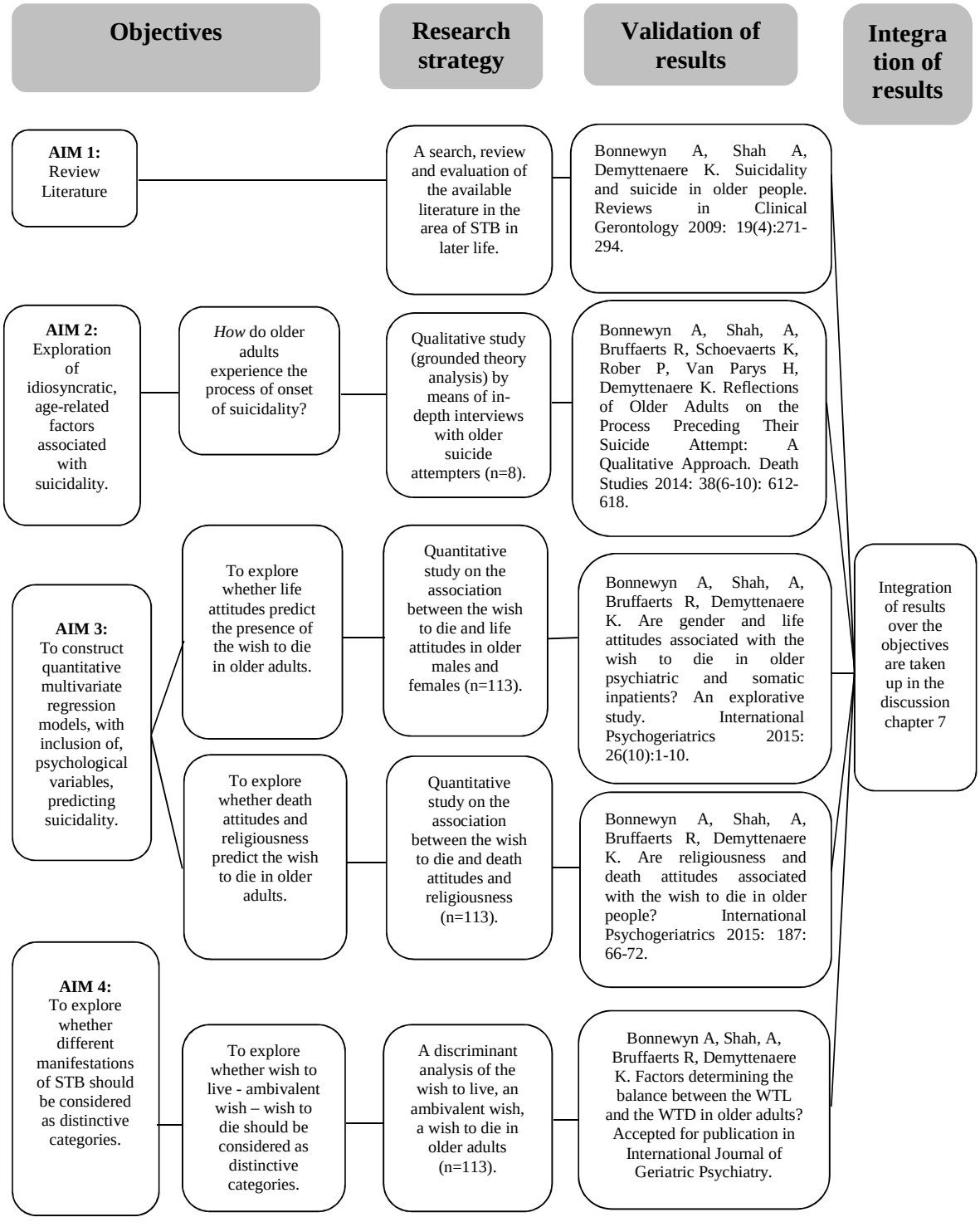
To construct univariate and multivariate regression models predicting a wish to die in older adults, differences in scores on the dependent variables (STB) between groups based on the independent variables were calculated using ANOVA and Chi Square results data. Logistic regression analyses (univariate and multivariate) were performed to identify the contribution of independent variables to the wish to die. The Pearson correlation coefficient was used to determine the strength of the association between the independent variables. Based on these analyses we excluded predictors that were highly correlated because we aimed to minimize the problem of multicollinearity and to decrease the number of predictors. The pseudovariance of the logistic regression models was calculated by means of Nagelkerke's R^2 and the goodness of fit of the logistic model by means of the Hosmer and Lemeshow goodness-of fit test (Hosmer and Lemeshow, 2000). As an overall indication of the quality of the regression models we calculated the concordance-statistic (or, C-statistic, i.e. the area under the Receiver Operating Characteristic curve). In order to investigate whether different manifestations of STB (dependent variable) can be considered as distinctive categories, we investigated the linear combination of different independent variables predicting the dependent variable (wish to live - ambivalent group – wish to die) by means of a discriminant analysis. Homogeneity of variance was tested with Box's M test (null hypotheses that the group variance-covariance matrices are equal). The structure matrix was used to label the functions and standardized canonical discriminant function coefficients gave an indication of the importance of independent variables (0.30 served as the cut-off between important and less important variables). All statistical analyses were performed by using SPSS 22.0 statistical software (IBM Corp).

1.5 Dissertation outline

This dissertation consists of a compilation of articles (published or submitted for publication) (see figure 3). In chapter 1, we provided an introduction to the research topic. Chapter 2 describes the research study on available literature on STB in older adults. In chapter 3, the research design and results of the qualitative study are presented. In chapter 4, 5 and 6 the results of the quantitative study are described. The successive research questions as described

in the first chapter are answered and discussed in the corresponding chapters. We conclude this dissertation with a general discussion (chapter 7) covering the main findings of the studies as well as implications, limitations, and suggestions for future research and clinical practice.

Figure 3. Summary of the objectives of the studies, the used research strategy, and the validation of the results.



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CHAPTER 2

LITERATURE REVIEW: SUICIDALITY AND SUICIDE IN OLDER PEOPLE

Published article

Bonnewyn A., Shah A., Demyttenaere K. Suicidality and suicide in older people. Reviews in Clinical Gerontology 2009; 19: 271-294.

ABSTRACT

Suicide is accepted as a major health problem worldwide, especially in young and middle age. It is however a significant health problem in older people as well as those aged 65 years and over generally have the highest suicide rates compared to all other age groups. In the last decade, there has been a heightened interest in research literature to disentangle the phenomenon of suicide in the elderly. This paper aimed to critically review the literature on suicidality in later life published in 2000-2009. Prevalence rates and risk and protective factors were mapped out and correlates were reviewed. The association between suicidality and help-seeking behaviour was considered. Finally, possible prevention strategies were reviewed.

2. LITERATURE REVIEW: SUICIDALITY AND SUICIDE IN OLDER PEOPLE

2.1 Introduction

Suicide is accepted as a major health problem worldwide, especially in young and middle age. It is however a significant health problem in the older people as well (De Leo et al., 2001) as those aged 65 years and over generally have the highest suicide rates compared to all other age groups (McKeown et al., 2006). An increase in the number of suicides among older people can be expected in the future because of the growing elderly population size worldwide. Furthermore, the 'baby boom' generation might be more vulnerable to suicide as sociological studies indicate that suicide rates tend to be higher in age groups constituting a large part of the population (Lindesay, 1991, Haas and Hendin, 1983). Therefore, suicide among older persons can be considered to potentially be a significant societal problem in the future. Unfortunately, suicide research focused on older people is remarkably less exhaustive and research lines are rather limited. In the last decade, there has been a heightened interest in disentangling the phenomenon of suicide in later life, reflected in a number of reviews dedicated to this theme (e.g. (Cattell, 2000, Conwell, 2001, Szanto et al., 2001b, Conwell et al., 2002a, O'Connell et al., 2004, Dombrovski et al., 2005, Chan et al., 2007b, Grek, 2007)). Nevertheless, there are some inconsistencies in research methodology that complicate integration and generalization of the research results (Burless and De Leo, 2001). The first issue is common in suicide research in general: "suicidal behaviour" is a broad term incorporating feelings and thoughts as well as overt behaviour, hindering a clear and generally accepted definition. Silverman and colleagues (Silverman et al., 2007) recently proposed several definitions in the classification of suicidal behaviour in order to improve communication in the field. Following a revision of the nomenclature of O'Carroll and colleagues (O'Carroll et al., 1997), they determined three terms to be essential: suicide-related ideations, suicide-related communication (suicide threats and suicide plans) and suicide-related behaviour (self-harm, suicide attempts and suicide). Suicide-related ideation includes thoughts and ideations, but this was not further specified. Suicide-related communication is "an interpersonal act of imparting, conveying, or transmitting thoughts, wishes, desires, or intent for which there is evidence that the act of communication is not itself a self-inflicted behaviour or self-injurious". Suicide-related behaviour is "a self-inflicted, potentially injurious behaviour for which there is evidence that the person wished to use the appearance

of intending to kill himself in order to attain some other end, or the person intended at some undetermined or some known degree to kill himself". In research literature on suicidality in later life, this terminology is not generally applied and more elaborated categories have been included as well, such as "life is not worth living", "wish to die", "death ideation" (e.g. (Barnow and Linden, 2000, Scocco and De Leo, 2002)). Moreover, in the assessment of suicidality, different manifestations of the spectrum of suicidality are often mixed up (e.g. (Cohen et al., 2009)). Second, different inclusion criteria are used in defining research samples: criteria for age vary from 50 years and over (e.g. (Duberstein et al., 2004a)) to 75 years and over (e.g. (Forsell, 2000)). Even though such a broad age range is used in the different studies, they are all classified as studies of suicidality in older people. Third, suicide rates are liable to cross-national trends: there is a variation of suicide rates in old age in different countries and cultures (Shah, 2007b), implying that cross-national data are difficult to compare. Fourth, assessment of suicidality in later life is inconsistent: interviewer-rated, informant-rated as self-report and semi-structured interviews are used as measurement instruments.

This paper will critically review the literature on suicidality in later life published in 2000-2009. We identified relevant studies by searching MEDLINE and PSYCINFO using the search terms "suicide", "suicidal", "suicide ideation", "death wish", "death ideation", "deliberate self-harm" or "suicide attempt" and "elderly", "older", "old age" or "later life". As mentioned in the introduction, different manifestations of the broad spectrum of suicidality will be considered and special attention will be paid to the method of assessment. First, prevalence rates and risk and protective factors will be mapped out. Second, psychological and neuropsychological correlates will be reviewed. Third, the association between suicidality and help-seeking will be considered. Fourth, potential prevention strategies are reviewed. Finally, we formulate conclusive remarks and suggestions for future research.

2.2 Prevalence and correlates of suicidality

The bulk of scientific literature on suicide and suicidality in older people consists of epidemiological studies, describing the occurrence of the different manifestations of the broad spectrum of suicidality and its correlates. It is remarkable that the majority of studies are dedicated to the most 'severe' manifestations, such as completed suicide and attempted

suicide. Less overt manifestations of suicidality, such as suicidal ideation, are investigated to a lesser extent.

Completed suicide

Prevalence. Rates of suicide among older persons have declined in several countries in recent years (Shah and Coupe, 2009, Shah et al., 2001, Kua et al., 2003, Pritchard and Hansen, 2005, Shah et al., 2007, Shah, 2007a, Koponen et al., 2007, Yamasaki et al., 2008, Lodhi and Shah, 2005, Shah et al., 2008b, Shah, 2009c) but the risk for completed suicide is still the highest in those over the age of 65 in comparison to younger age groups (McKeown et al., 2006, Shah, 2007b). Integrated data from 87 countries on suicide from the WHO indicate following suicide rates for males aged 65-74 years (0.019%), males aged 75+ years (0.027%), females aged 65-74 years (0.0048%) and females aged 75+ years (0.0052%) (Shah et al., 2007). Prevalence rates of completed suicide vary strongly geographically, from 0.020% in Australia (Snowdon and Baume, 2002) and 0.016% in the United States (McKeown et al., 2006) to 0.039% in Europe (De Leo et al., 2001). Shah and colleagues (Shah et al., 2007) reported the lowest suicide rates in the Caribbean and in Central American and Arabic countries. The highest rates are found mainly in Central and Eastern Europe and in some oriental and some western European countries. Research reports on suicide rates in specific countries are reproduced in Table 1.

Correlates. Population-based studies investigating correlates of national suicide rates revealed an association between suicide rates and various distal factors: a curvilinear association with educational attainment (U-shape) (Shah and Chatterjee, 2008), urbanization (only in males) (U-shape) (Shah, 2008c), the human development index – a composite index measuring average achievements on dimensions of life expectancy, educational attainment and socio-economic status (inverted U-shape) (Shah, 2009f), fertility rates as a measure of social integration (U-shape) (Shah, 2008e, Shah, 2008b), annual population growth rates (U-shape) (Shah, 2009e); a positive correlation with rates of smoking (Shah, 2008d) and income inequality (Shah et al., 2008a, Shah, 2009a), a negative correlation with societal crime (Shah, 2008f), mean household size (Shah, 2009g). There was no significant association found with tuberculosis rates (Shah, 2009d), extent of gender equality (Shah, 2008a) and overall unemployment rates (Shah, 2008g). The effect of belonging to a minority group has been sparsely researched (e.g. (Shah et al., 2009)). A gender effect in old age suicide is established: more men than women complete suicide (Kapusta et al., 2007, Shah, 2007b, Harwood et al., 2000, Hoxey and Shah, 2000, Erlangsen et al., 2006). Proximal correlates of suicide are mainly investigated in case-series and case-control studies using the psychological autopsy

method. Major depressive episode (MDE) (Conwell et al., 2000, Yang et al., 2001, Harwood et al., 2001, Turvey et al., 2002, Preville et al., 2005b, Waern et al., 2002b, Waern et al., 2003, Conner et al., 2004, Chiu et al., 2004, Erlangsen et al., 2006, Koponen et al., 2007, Pompili et al., 2008, Salib et al., 2005, Preville et al., 2005a, Conwell et al., 2009), and having a physical illness (Turvey et al., 2002, Duberstein et al., 2004a, Waern et al., 2002a, Waern et al., 2003, Juurlink et al., 2004, Llorente et al., 2005, Artero et al., 2006, Pompili et al., 2008, Harwood et al., 2006b, Salib et al., 2005, Conwell et al., 2009) are found to be robust proximal correlates independently of the presence of other factors. With regard to the presence of physical illness, it was determined that the risk was cumulatively greater when the number of physical illnesses increased (Juurlink et al., 2004, Koponen et al., 2007). The presence of following proximal factors were also found to contribute to an elevated risk for completed suicide: other mental disorders, such as anxiety disorders (Waern et al., 2002b, Juurlink et al., 2004, Conwell et al., 2009), psychotic disorders (Waern et al., 2002b, Juurlink et al., 2004), and substance use disorders (Waern, 2003, Waern et al., 2002b), recent bereavement (Erlangsen et al., 2004, Harwood et al., 2006b), financial problems (Waern et al., 2003, Harwood et al., 2006b, Voaklander et al., 2008), poor sleep quality (Turvey et al., 2002), marital status (with a higher risks for widowed or divorced persons) (Duberstein et al., 2004b, Harwood et al., 2000, Harwood et al., 2006b, Pompili et al., 2008), social interaction (Duberstein et al., 2004b), religious involvement (Duberstein et al., 2004b, Pritchard and Baldwin, 2000), functional limitations (Conwell et al., 2000, Conwell et al., 2009), employment change (Duberstein et al., 2004a), family discord (Rubenowitz et al., 2001, Waern et al., 2003, Duberstein et al., 2004a, Duberstein et al., 2004b), cerebro-vascular risk factors (Chan et al., 2007a) and previous suicide attempt(s) (De Leo et al., 2002b, Hawton and Harriss, 2006, Hawton et al., 2003b, Zahl and Hawton, 2004). Childlessness was not retained as a correlate (Salib et al., 2004). For the older person who completed suicide, but who did not suffer from a psychiatric illness, personality factors, physical illness and recent bereavement were more important contributory factors than sub-syndromal psychiatric disorders (Harwood et al., 2006a).

Attempted suicide

Prevalence. Reports on a decrease (De Leo et al., 2001) as well as on an increase (Hawton et al., 2003a, Shah, 2009b) of overall rates of attempted suicide in older people have been published. Only a few studies have reported population rates of suicide attempts. The WHO/EURO Multicentre Study of Suicidal Behaviour (De Leo et al., 2001) reported a mean

rate for attempted suicide of 0.06% in the European population aged 65+. There are some regional rates available for Padua, Italy (0.14%) (Scocco and De Leo, 2002); Baltimore, USA (0.03%) (Kuo et al., 2001); Western Australia (0.05%) (Lawrence et al., 2000); Oxford, UK (0.06%-0.12%) (Hawton and Harriss, 2008b); Barnet, UK (0.05%) (Ruths et al., 2005). Scocco and colleagues (Scocco et al., 2006) reported a 1-year prevalence rate of 0.030% in nursing homes in north-east Italy.

Correlates. Correlates of attempted suicide are MDE (Beautrais, 2002, Tsoh et al., 2005, Lebret et al., 2006), with or without a presence of psychotic features (Lykouras et al., 2002), social isolation (Beautrais, 2002, Lebret et al., 2006), past suicide attempts (Tsoh et al., 2005), poor ADL functioning level (Tsoh et al., 2005), gender (generally more women than men (Ruths et al., 2005, Hawton and Harriss, 2006, Lebret et al., 2006), except in (Hawton and Harriss, 2006)), traumatic life experiences (Barak et al., 2005), history of abuse (Talbot et al., 2004) and specific physical illnesses (Tsoh et al., 2005). Marital status varies according to the study: no robust correlates were found (De Leo et al., 2001, Beautrais, 2002, Ticehurst et al., 2002, Ruths et al., 2005).

Suicide ideation

Prevalence. Population studies mapping out suicide ideation in older people differ strongly in inclusion criteria of age. The cut-off age is seldom set on 65+, samples of higher age are often included. Point prevalence rates are estimated at 1% in persons aged 70+ (Barnow and Linden, 2000). One year prevalence rates in a sample of 65+ years were estimated around 2%-3% (Kuo et al., 2001, Cook et al., 2002, Scocco and De Leo, 2002). One month prevalence rates were estimated on 36% in medically ill (Shah et al., 2000) and on 2.3% in older people inhabiting a nursing home (Scocco et al., 2009).

Correlates. Suicide ideation is independently associated with MDE (Bartels et al., 2002, Yip et al., 2003, Yen et al., 2005, Awata et al., 2005, Chou, 2006, Witte et al., 2006). The presence of alcohol related disorders revealed contradictory support (Awata et al., 2005, Bartels et al., 2002). Other significant correlates are higher age (Cukrowicz et al., 2008), lack of social support (Bartels et al., 2002, Yip et al., 2003, Vanderhorst and McLaren, 2005, Awata et al., 2005, Rowe et al., 2006a, Rowe et al., 2006b), limitations of daily living (Hirsch et al., 2006, Dennis et al., 2009), lower level of education (Yen et al., 2005), limited community participation (Yen et al., 2005), and poor physical health (Yip et al., 2003, Bartels et al., 2002).

Death wish

Prevalence. Point prevalence rates of the presence of a death wish in the general population were estimated at 5% (Barnow and Linden, 2000, Alpass, 2005). Cook and colleagues reported lower rates (2.5%) for African Americans (Cook et al., 2002). One year prevalence rates were estimated from 3.3% (Dennis et al., 2009) to 6.2% (Scocco et al., 2001a, Scocco and De Leo, 2002) in home-dwelling older people and to 29.1% in a nursing home (Scocco et al., 2009).

Correlates. Depressive and anxiety symptoms were reported to be correlated with a death wish (Bartels et al., 2002). After controlling for depression, self-perceived health and marital discord were found to be significant correlates (Chen et al., 2008). Higher age, female gender and negative living conditions seemed moderately related to the presence of a death wish, but this latter included the presence of suicidal ideation as well (Barnow et al., 2004).

Feeling of unworthiness of life

Prevalence. Point prevalence of feelings of unworthiness of life varies widely from 4.1% (Alpass, 2005) to 14.7% (Barnow and Linden, 2000). One year prevalence rates are estimated from 1.3% (Dennis et al., 2009) to 4.9% (Scocco et al., 2001a, Scocco and De Leo, 2002). One month prevalence rates were estimated at 33% in the medically ill (Shah et al., 2000), at 21.5% in older people dwelling in a nursing home (Scocco et al., 2009) and at 3.7% in home-dwelling persons (Scocco et al., 2001a).

Correlates. Recent research literature reporting on correlates of feelings of unworthiness of life is not available.

For the sake of completeness, it is important to mention the availability of research literature reporting prevalence of suicidality whereby assessment of suicidality has not been split up into different manifestations of the spectrum of suicidality. These reports are reproduced in Table 1. To our knowledge, there is no research data available on the occurrence of thoughts on planning to complete suicide.

2.3 Methods of suicide

The main methods used by older persons to complete suicide are firearms, hanging, drug overdose, drowning, asphyxia (Tadros and Salib, 2000, Harwood et al., 2000, Salib et al., 2004, Hawton and Harriss, 2006, Kapusta et al., 2007, Voaklander et al., 2008, Salib, 2005).

It is important to highlight that trends in the methods used are liable to national differences (national policy in restriction of firearms) and to the types of residence (community versus long-term care) (Mezuk et al., 2008). Trends in time have been observed as well: despite a reduction in prescription of benzodiazepines, drug overdose suicides have increased in recent years (Carlsten et al., 2003). A gender effect has been observed as well: men tended to use more violent methods (Erlangsen et al., 2003). The use of more violent methods increased by age (Erlangsen et al., 2003).

Studies on suicide attempts reported drug overdose as the main method, followed by hanging and self-injury (De Leo et al., 2001, Ruths et al., 2005, Lamprecht et al., 2005, Lebret et al., 2006). Studies comparing the methods used in suicide attempts and completed suicides revealed no differences (Salib et al., 2001a, Salib and Tadros, 2000) and the majority of persons with a history of a suicide attempt used the same method in their final act as in their last attempt (Salib et al., 2001b, Salib et al., 2001a).

The suicide intent in attempted suicides of older persons was found to be higher in comparison to younger attempters (Harriss and Hawton, 2005): two-thirds had significant higher intent scores (Hawton and Harriss, 2006). Suicidal intent of the attempt is correlated to attempt lethality (Dombrovski et al., 2008b). Attempt lethality was found to be higher in older men and in younger women in later life (Dombrovski et al., 2008b).

In view of the changed ratio of suicide attempts versus completed suicides (8:1 compared to 29:1 in adulthood (Hawton and Harriss, 2008a)), one can make an indirect assumption that suicide attempts increase in lethality by age (Salib et al., 2005). Research data confirm this assumption: in a sample of suicide attempters, aged 50 years and over, higher age was indeed associated with higher attempt lethality in men (Dombrovski et al., 2008b) and higher degree of attempt planning overall (Conner et al., 2007).

2.4 Protective factors

A few research reports have been published, aiming to explore which variables have a protective function in the development of suicidality when confronted with risk factors.

Sense of belonging. "Sense of belonging" has been defined as the experience of being personally involved and integrated within an environment or system (Hagerty et al., 1992). Two dimensions have been discerned: an antecedent dimension (a person has the energy, interest and potential to develop a sense of belonging) and a psychological dimension (a person has to feel valued, needed and significant within the environment). Both components of sense of belonging were protective in the development of suicidality (in a sample of retired home-dwelling older people), although they operated in different ways (McLaren et al., 2007). High scorers on the antecedent dimension of sense of belonging expressed less suicidality than low scorers independently of the effect of depression, whereas high scorers on the psychological dimension of sense of belonging seemed to be protected against suicidality even when they expressed a high level of depression.

Positive future orientation. "Future orientation" has been defined as "a predisposition to think about and have a positive mood about the future and to strive toward achievement of identified goals" (Hirsch et al., 2006). Hirsch and colleagues (Hirsch et al., 2006) found that in patients with MDE (50 years and over), having a positive future orientation was associated with lower reports of suicidal ideation, although this association might be due to an interaction effect with functional status: the association between functional status and the presence of suicidal ideation is weaker for patients with higher levels of future positive orientation (Hirsch et al., 2007b).

Positive affect. The trait Positive Affect was shown to distinguish older primary care patients (65 years and over) reporting suicidal ideation from those who did not (Hirsch et al., 2007a).

Agency. Agency measured as "socially desirable masculine traits" was found to be related to suicidal ideation in Australian men, not women, aged 65 years and over (Hobbs and McLaren, 2009): older depressed men with low levels of agency have a greater increase of level of suicidal ideation compared to depressed men with high levels of agency.

Reasons for living. Patients with MDE (aged 50 years and over) who reported higher levels of fear of suicide were less likely to report suicidal ideation (Britton et al., 2008). Concerning reasons for not committing suicide, moral objections and child-related concerns were raised by older people (Miller et al., 2001).

Happiness. Happiness was shown to have an attenuating effect on the relationship between the number of self-reported diseases and the report of suicidal distress in primary care patients (60 years and over): persons with chronic medical problems who also exhibit positive emotions are less distressed by thoughts of suicide (Hirsch et al., 2009).

2.5 Psychological factors

During the last decade, personality and psychological variables have been included in suicide research in an attempt to identify their mediating role in the development of suicidality in older persons exposed to risk factors. At the same time these study designs were set up to test the hypothesis that different manifestations of suicidality might be discerned by means of differences in psychological and personality functioning. This dual approach implies that research reports on the one hand have included a wide variety of psychological and personality variables and on the other hand that they have used different groups of comparison concerning manifestation of suicidality. This strongly hampers comparability of research results. In the next paragraph, special attention will be given to provide an accurate description of results against the background of included comparison groups in those studies.

Personality traits

Duberstein and colleagues included personality traits as variables which might distinguish different manifestations in the spectrum of suicidality. The basic framework of personality traits they applied was derived from the Five Factor Model which assumes that personality attributes can be grouped along five major dimensions: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness (McCrae and Costa, 1997). In a series of studies, they found that different manifestations of suicidality could be linked to a different pattern of scores on these personality dimensions. A first study (Duberstein et al., 2000) with a clinical sample of depressed inpatients aged 50 years and over revealed that a lifetime history of suicide attempts was correlated with higher Extraversion, that high scores on suicidal ideation was correlated with higher Neuroticism (this link might however be caused by other mediating factors as Agreeableness and Openness) and that lower scores on suicidal ideation was correlated with lower Openness. Furthermore, Heisel and colleagues (Heisel, 2006) found that the presence of suicidal ideation (“passive suicidal desire” or “desire to make an active suicide attempt”) was correlated with higher Openness. Tsoh and colleagues (Tsoh et al., 2005) found that suicide attempters, in comparison to community-matched older people, were lower on Conscientiousness. Finally, Useda et al (Useda et al., 2007) reported that suicide attempters, in comparison to older persons who committed suicide, were lower on Conscientiousness and higher on Neuroticism, which was a partial replication of the findings of Tsoh and colleagues (Tsoh et al., 2005).

The study of Useda and colleagues (Useda et al., 2004) included lower order personality traits (so-called facet levels) in a sample of depressed inpatients aged 50 years and over. A lifetime history of suicide attempts was correlated with lower Positive Emotion and higher Modesty. Severity of suicidal ideation was correlated with lower Warmth and higher Modesty.

Among a sample of depressed inpatients aged 65 years and over, narcissistic personality disorder and narcissistic personality traits were correlated to both the presence and severity of suicidality (feeling that life is not worth living, wishing to be dead, thoughts of possible death, suicidal ideas and gestures or attempts at suicide) (Heisel et al., 2007). Harwood and colleagues (Harwood et al., 2001) reported the presence of a personality disorder and personality trait accentuation as correlated with completed suicide in comparison to a matched sample of older persons who died from natural causes. In a sample of older people who completed suicide, but without a psychiatric disorder at time of death, personality trait accentuation was found to be common as well (obsessional traits were the most frequent) (Harwood et al., 2006a), suggesting that in the development of suicidality, the way how a person perceives and solves life problems might be more important than the problem itself.

Emotion traits, considered as a subset of the broader category of personality traits and as predispositions to experience particular emotions (Izard, 1998), were found to be distinctive among a sample of depressed inpatients 50 years and over. A history of suicide attempt after the age of 50 was correlated with lower Anxiety.

A recent qualitative, psychological autopsy study (Kjolseth et al., 2009) with relatives of suicide completers aged 65 years and over, indicated that a combination of three factors (life history, personality traits and relationship) were found to be important in contributing to suicide. The suicide completers were described as emotionally closed persons finding difficulties in accepting and adapting to age-related loss of function, which might be mediated by a feeling of loss of control.

Hopelessness

In research literature on suicidality in adulthood, the concept of hopelessness takes a central place (Van Heeringen, 2001). Hopelessness, defined as “a cognitive or affectively laden construct, as a state of having negative expectancies towards the future” (Beck et al., 1974), was proven to be a significant predictor of suicidal ideation (Beck et al., 1993), of seriousness

of suicide intent (Wetzel, 1976) and of completed suicides (Beck et al., 1990) in adult populations. In literature on suicidality in later life, findings are more confusing. In some studies hopelessness was shown to be a significant predictor of suicidal ideation (Szanto et al., 2001a, Witte et al., 2006, Vannoy et al., 2007), whereas in others this effect was neutralized when including other variables such as depression (Britton et al., 2008), positive future orientation (Hirsch et al., 2006, Hirsch et al., 2007b) or personality traits (Heisel et al., 2006).

Aggression - Hostility

In a group of home-dwelling older people (mean age 76 years) the occurrence of death ideation or suicidal ideation was found to be correlated with the presence of feelings of hostility (Scocco et al., 2001b, Scocco et al., 2001a). In a study of depressed inpatients aged 50 years and over, hostility did not distinguish patients with a history of suicide attempt from those without a history of suicide attempt (Seidlitz et al., 2001).

An association between aggression and completed suicide was found, but this was moderated by age: in suicide completers age 50 to 64 years, not aged 65 years and older, general aggression was elevated in comparison to matched community-dwellers (Conner et al., 2004). These data are congruent with lifespan research data (McGirr et al., 2008), demonstrating that impulsive-aggressive behaviour is mainly linked to suicide in young age and is a less important contributor to suicide in older age.

Coping

Problem solving. In adult literature on suicidality, the inability of problem-solving was determined to be closely linked to suicidality (Williams and Pollock, 2001). However, this hypothesis has only concisely been tested in older people. In a study with a relatively small sample size, it was found that suicidal attempters, aged 65 years and over, did not differ in the ability to generate means to solve interpersonal problems (Howat and Davidson, 2002). In a recent study investigating the perception of problem-solving capabilities (Gibbs et al., 2009a), a difference was found between suicide attempters, aged 60 years and over, and non-suicidal depressed older persons: the attempters perceived their overall ability of problem solving as deficient and more particularly, they regarded their problems more negatively and approached them in a more impulsive manner.

Emotion regulation. Lynch and colleagues (Lynch et al., 2004) reported that in a sample of depressed older persons, emotional inhibition (thought suppression and ambivalence about emotional expression) was found to be predictive for suicidal risk (defined as a composite of hopelessness and suicidal ideation). Cukrowicz and colleagues (Cukrowicz et al., 2008) replicated this role of thought suppression in a study with a sample of depressed persons with co-morbid personality disorders, aged 55 years and over. Additionally, maladaptive coping styles (emotional coping and avoidance coping) were found to be predictive of suicide risk as well.

Attitudes towards suicide

Concerning attitudes towards suicide and suicidal risk in later life, suicide was considered as more acceptable, more strongly related to a lack of religious conviction, more lethal, more normal, more irreversible or permanent and more strongly related to individual aspects in later life (Segal et al., 2004).

2.6 Dementia and neuropsychological factors

The association between dementia, neuropsychological performance and suicidality has not been investigated systematically. Recent studies are scarce, sample sizes of the studies are small or include case-studies (Peisah et al., 2007b). In studies associating suicidality and dementia, patients with different diagnostic subtypes of dementia and different stages of dementia are included (Haw et al., 2009). In studies associating suicidality with neuropsychological performance, a wide range of neuropsychological tests is used. This causes the results to be of limited use.

Dementia. The overall association between dementia and suicide was found to be weak (Haw et al., 2009, Purandare et al., 2009). A recent study of Purandare and colleagues (Purandare et al., 2009) compared 118 persons with dementia -who died by suicide- with age and gender-matched non-dementia suicide cases. The methods of suicides used by patients with dementia were comparable to those used by the controls. They were less likely to have a history of suicide attempt or a history of psychiatric hospitalization compared to the control cases. In a study of psychiatric inpatients, inpatients with dementia were found to have a significantly lower risk to commit suicide than other psychiatric inpatients (Erlangsen et al., 2006), whereas outpatients diagnosed with dementia during hospitalization had an elevated risk

compared to the general population (Erlangsen et al., 2008b). Subtypes of dementia have not been investigated except for Alzheimer disease (AD), which revealed inconsistent findings: an increased (Peisah et al., 2007a) as well as a decreased (Rubio et al., 2001) prevalence of AD was found in suicide completers. Suicide attempts were found to be uncommon in dementia in general (Tsai et al., 2007) and in AD (Barak and Aizenberg, 2002). Some case studies (e.g. (Lim et al., 2005)) suggested that the risk for suicide was greater at an early stage of AD than at later stages. Purandare and colleagues (Purandare et al., 2009) rephrased this postulation slightly: the highest risk for suicide does not present itself in the first twelve months after disclosure of the diagnosis, but at the stage of dementia where patients experience difficulties in daily living while still they still have a preservation of insight in their cognitive deterioration.

Neuropsychological functioning. Overall poor cognitive functioning is significantly associated with the presence of a death wish and suicidal ideation (Ayalon et al., 2007, Dombrovski et al., 2008a), although this link might be mediated by depression and/or hopelessness (Heisel et al., 2002). Global lower cognitive functioning was found to be associated with lower levels of planning in a sample of depressed suicide attempters (Conner et al., 2007) but not with the degree of lethality of a suicide attempt (Dombrovski et al., 2008b).

With regard to specific cognitive functions, depressed suicide attempters were found to have lower capacities of mental sequencing and lower flexibility compared to depressed non-attempters (King et al., 2000). Depressed suicidal persons were found to perform poorly on executive functioning (Dombrovski et al., 2008a), although executive function was not found to be associated with severity of suicidal ideation (Belderbos and Shah, 2003) and persons with a death wish performed more impaired on a time orientation task (Ayalon and Litwin, 2009).

2.7 Course of suicidality and efficacy of treatment

Given the robust relationship between MDE and suicidality in later life, the course of suicidality has been investigated in studies focusing on the course of depressive disorders (naturalistic studies and medication trials). The course of suicidal ideation was found to be strongly determined by the course of the depressive symptoms, a finding that was replicated in different treatment settings such as collaborative primary care (Vannoy et al., 2007),

medication trials (Szanto et al., 2003, Szanto et al., 2007), a geriatric medicine ward (Shah et al., 2000) and a naturalistic study of medication and psychotherapy (Cukrowicz et al., 2009). There are only few data available on the efficacy of treatment of suicidality in older people. Because of ethical considerations, suicidal patients are often excluded from randomized controlled studies. Therefore, study results are concise and far from robust. First, the link between trends over time in prescription of psychotropics and changes in rates of completed suicides in older persons has been investigated. Seeing that mainly ecological study designs were used rather than randomized controlled studies, causality from the data could not be accurately inferred and therefore the data should be interpreted with caution. An increased use of antidepressants was linked to a decrease in suicide rates of older people in Denmark (Erlangsen et al., 2009), the United Kingdom (Lodhi and Shah, 2004, Shah and Lodhi, 2005), Hungary (Kalmar et al., 2008), Australia (Hall et al., 2003), Japan (Nakagawa et al., 2007), Israel (only for men; (Barak and Aizenberg, 2006)). A lower use of benzodiazepines was linked to a decrease in suicide rates in the United Kingdom (Lodhi and Shah, 2004). Second, there are some studies reporting on data on specific groups of suicidal patients or suicide completers receiving some kind of treatment. Szanto and colleagues (Szanto et al., 2001a) did not find a difference in treatment outcome (combined pharmacotherapy and psychotherapy) of MDE in older persons with or without suicidal ideation, although the latter group had higher relapse rates during continuation treatment. Nelson and colleagues (Nelson et al., 2007) found that depressed outpatients (aged 60 years and over) treated with sertraline reported less death ideation and/or suicidal ideation after eight weeks compared to the placebo-controlled group. Juurlink and colleagues (Juurlink et al., 2006) found an increased risk of suicide during the first month of SSRI therapy compared with other antidepressants. Barak and colleagues (Barak et al., 2006) described retrospectively collected data on a sample of depressed hospitalized older persons. The group of suicide attempters was significantly less exposed to antidepressant treatment compared to the group of non-attempters. A Danish population study revealed that 35% of men and 56% of women who had died by suicide, aged 50 years and over, were in treatment with antidepressant (Erlangsen et al., 2008a). Based on preliminary data, Crumpacker (Crumpacker, 2008) suggested a higher risk of suicide in older persons confronted with akathisia as an adverse event of antidepressant treatment. A case-control study of all Danish people, aged 50 years and over, who initiated antidepressant treatment revealed that whether antidepressant treatment was continued or discontinued at an early stage did not have a significant impact on suicide risk (Erlangsen et al., 2009). Some preliminary data have been reported on the association between treatment of bipolar disorder and the

presence of suicidality: older patients with bipolar disorders treated with mood stabilizers and antidepressants were associated with a lower risk for suicide attempts (Aizenberg et al., 2006).

2.8 Contact with health care providers

It is a consistent finding that the majority of older people with a suicide attempt or with a completed suicide has had a previous contact with health care, which is a more robust finding than in younger adults (Luoma et al., 2002).

Suicide. Luoma and colleagues (Luoma et al., 2002) reported aggregated data on older suicide completers: 58% and 77% have had contact with primary care within one month or within one year respectively before suicide; 11% and 8.5% have had contact with mental health care within one month or within one year respectively before suicide. In a Swedish study of Waern and colleagues with suicide completers (Waern et al., 2002b), in the month before death, 42% have had contact with a non-psychiatrist physician, 25% with a psychiatrist. In a Finnish study of Pitkälä and colleagues (Pitkala et al., 2000), 70% of the suicide completers have had contact with a form of health care service. In a Canadian study, individuals in more than half of the suicide cases were reported to have had a consultation with a GP or specialist during the 2-week period before death (Preville et al., 2005a). An effect of gender (males are less likely to have contact with psychiatric health care) has been reported (Salib and Green, 2003, Tadros and Salib, 2007). Furthermore, a link between suicide and a history of hospitalization has been discovered. A Danish study revealed that more than half of the persons, aged 65 years and over, who completed suicide experienced one or more hospitalizations with medical illnesses during the two years before death (Erlangsen et al., 2005b). Also, older people experiencing a psychiatric hospitalization, previously or currently, were found to have a higher risk for suicide than those who had not (Erlangsen et al., 2005a, Karvonen et al., 2009). Karvonen and colleagues (Karvonen et al., 2009) found that 30% of the completed suicides of persons, aged 50 years and over, occurred during the first month after being discharged from a hospital.

Attempted suicide. Around 60% of the suicide attempters have had contact with primary care (Suominen et al., 2004, Lamprecht et al., 2005), and 33%-42% of them have had contact with mental health care (Marriott et al., 2003, Suominen et al., 2004, Ruths et al., 2005). After a suicide attempt, the majority is referred to aftercare (Ruths et al., 2005, Suominen et al., 2004, Marriott et al., 2003).

Suicidal ideation. To our knowledge, no recent data are available on help-seeking behaviour of older persons with suicidal ideation. An inquiry of primary care physicians revealed that they reported less willingness to treat an older suicidal patient than a younger suicidal patient with the same complaints (Uncapher and Arean, 2000).

2.9 Prevention

Based on the available empirical literature, guidelines for suicide prevention in older people have been delineated (Conwell, 2001, Conwell and Duberstein, 2001, Szanto et al., 2001b, Heisel and Duberstein, 2005, Chiu et al., 2003). Reports on prevention discern different domains of intervention opportunities: improving risk assessment and detection of suicidality, treatment of at-risk persons, and the development of specific prevention programs (Heisel and Duberstein, 2005).

Risk assessment and detection of suicidality. A significant part of older persons who completed suicide have been in contact with primary or secondary care services (see above). Therefore, detection of suicidality and suicide risk in health care is of major importance. In a general practice, around 6% of the older patients acknowledged current suicidal ideation (Pfaff and Almeida, 2005, Pfaff and Almeida, 2004). However, a study revealed that older people who have completed suicide, had presented themselves with complaints of physical pain (39%) or depression (46%) during the last consultation with their GP (Pfaff and Almeida, 2005, Szanto et al., 2002).

Treatment of at-risk persons. The robust association between depressive disorder and suicidality in older people (both in occurrence as well in trajectory) shows that adequate treatment of depression can indirectly lead to a decrease in suicidality (Bruce et al., 2004). First, recent population data showed a clear link between trends in prescription of psychotropics and changes in rates of completed suicides (see above). Second, we can assume a significant undertreatment of suicidal older persons (Abrams et al., 2009): postmortem toxicological investigation of suicide completers revealed that antidepressants were detected only in one out of five cases. Third, specific treatment programs of depression in primary care were linked to a reduction of suicide risk. A primary care-based collaborative program for depression has led to lower rates of suicidal ideation in comparison to controls (Unutzer et al., 2006, Alexopoulos et al., 2009). A primary care intervention, consisting of treatment

guidelines tailored for older people with care management, has led to a faster decline of rates of suicidal ideation in comparison to usual care (Bruce et al., 2004). Within the scope of the PROSPECT-study, "Prevention of Suicide in Primary Care Elderly: Collaborative Trial" (Bruce and Pearson, 1999), guidelines have been formulated for the management of suicidality in primary care settings (Brown et al., 2001). Fourth, prevention for suicide might include a restriction of means to commit suicide among at-risk persons. For example, given the association between the availability of firearms and the increased risk for suicide, the need for screening for firearm availability among older persons suffering distress or suicidal ideation has been suggested (Conwell et al., 2002b, Oslin et al., 2004). Shah and colleagues (Shah et al., 2002) suggest a similar precaution in prescription practice of benzodiazepines, paracetamol and tricyclic antidepressants, in view of drug overdose as a common method of completed suicide in older people. Inappropriate prescription of benzodiazepines for example might generate an elevated risk of completed suicide (Voaklander et al., 2008). Fifth, research data demonstrate that an attempted suicide in older people should be regarded as a 'failed completed suicide' (Salib et al., 2001a, Hawton and Harriss, 2006) and is a robust risk factor for completed suicide in the future. Clinicians need to be made aware that the majority of persons who attempt to complete suicide have a real wish and intent to be dead and that adequate treatment after a suicide attempt is indispensable.

Population prevention programs. A provision of a telephone service (biweekly telephone calls for support and needs assessment and a 24h emergency alarm service) was found to have a long-term positive effect on suicide rates in Italy (De Leo et al., 2002a).

2.10 Summary and directions for future research

During the last decade, suicide and suicidality in older people have received significant scientific attention. The volume of research literature on suicidality in later life is catching up, which has resulted in an investment in research discerning distal and proximal risk factors of suicide in later life. The considerable delay compared to research on suicidality and suicide in younger age groups implies a rather limited approach of the phenomenon however. The bulk of research literature is set up from an epidemiological point of view, implying that a comprehensive, integrative model is lacking. Only a few researchers have included other factors in research designs (e.g. psychological variables, personality factors) apart from the standard risk factors to understand the development of suicidality in older people in a

profound way. Therefore, it is important that future research lines are taking into account research questions which approach the essence of suicidality and suicide in the elderly. Challenges in future research might be related to following four questions.

First, how do different suicidal expressions relate to one another? Rates of completed suicide increase with higher age, while rates of suicidal ideation and suicide attempts seem to decrease (Hawton and Harriss, 2008b). This change in ratio by age raises the question to what extent different expressions are mutually dependent: can different expressions of suicidality be situated on a same continuum of severity or are these different entities? Epidemiological data, indicating the same correlates of different expressions of suicidality on the one hand, and the similar characteristics of attempted suicide and completed suicide on the other hand (Salib and Tadros, 2000, Salib et al., 2001a, Hawton and Harriss, 2006) is supportive for the first postulate. However, the fact that personality characteristics can be linked to different expressions of suicidality is supportive for the latter. Research designs mutually comparing expressions of the extensive spectrum of suicidality might reveal evidence for or against the categorical versus dimensional conceptualization of suicidality.

Second, why does only a minority of older people become suicidal? The identified risk factors seem to be crucial components in the development of suicidality on the one hand but they do not seem to be sufficient by themselves. The presence of a medical illness for example is very common in old age, but only a minority exposed to this becomes suicidal. The role of MDE as a primordial risk factor is rather unclear as well: not all depressed older adults express suicidality – around 65% in a study of Nelson and colleagues (Nelson et al., 2005) and MDE is not exclusively linked to a specific manifestation of suicidality. Moreover, the psychosocial risk factors correlated to MDE in older people (Bruce, 2002) do not seem to be different from those found for suicidality in the elderly. On the other hand, it is still unclear which psychological variables (trait and/or state variables) are playing a mediating role in the development of suicidality when confronted with risk factors. Research to date has included too few psychological variables representing or including the challenges inherent to the phase of later life. Future research might need to start from the features of the old age phase and its inherent psychological adaptation to determine which factors are significant and which ones are playing a mediating role. The concept of ‘successful aging’ might be very useful in this respect. In psychological literature, several authors have developed theories from a psychological perspective on how persons can age successfully (e.g. (Rowe and Kahn, 1997, Baltes and Baltes, 1997)). Recent studies (e.g. (Wong, 2000, von Faber et al., 2001)) adapted

and complemented these theories by integrating expert and elderly perspectives on successful aging. These lines of might be very helpful in conceptualizing and forming a theory on development of suicidality in later life, this in contrast to successful aging.

Third, is suicidality in older people a homogenous concept? On the one hand, in research to date, the range of age of included patients varies widely, implying that in research literature the group of elderly is considered as rather homogenous. The question can be raised whether this assumption is valid. Some authors (e.g. (Baltes and Smith, 2003)) have broached an important but underestimated difference in research between the young old and the oldest old. Both groups might be confronted with specific challenges inherent to their age, which in some cases might result in a similar development of suicidality, but the phenomenology of suicidality might be dissimilar. On the other hand, research to date on suicidality in later life has been rather detached from suicidality in adult life. Considering suicidality against the background of the lifecycle (e.g. (McGirr et al., 2008)) is important in future research to find further evidence for the hypothesis that suicide in young or older age is characterized by different diatheses-stress models. Consequently, future research should pay attention both to the specific impact of age on suicidality in later life as on integrating this in lifespan research on suicidality.

Finally, how is suicide in later life related to topics like indirect self-destructive behavior, euthanasia and assisted-suicide? Against the background of changing attitudes in industrialized societies on self-determination and personal control over one's life, it is striking that in research literature to date these concepts (and the possible link between them) have received only marginal notice. Few authors tried to disentangle these phenomena (Fortin et al., 2001, De Leo and Spathonis, 2003, Leenaers, 2003, Vanlaere et al., 2007, Rurup et al., 2005), but empirical data are lacking. Until now it is unclear for instance how the request for euthanasia in terminally ill is related to suicide or to what extent indirect self-destructive behavior can be considered as suicide. Trying to understand and integrate these phenomena might make research on suicidality in later life more complex but it seems indispensable in the future to gain an insight in the decision process to choose the time and modus of one's own death. Considering suicidality in later life as having a multifaceted and complex character will provide better guidelines for a more effective prevention policy.

Table 1. Prevalence of suicidality and suicide in later life (research literature 2000-2009).

	Target sample	*Age range*	*Instruments/ Assessment*	*Specificities in assessment*	*Prevalence*	*Time frame*
Death ideation – Suicidal ideation						
(Forsell, 2000)	Population study – Sweden (Stockholm)	75+	Structured psychiatric interview	Expression of weariness of life and that he would be better off dead as well as the presence of passive and active suicidal thoughts	11.6%	1 year
(Shah et al., 2000)	Geriatric inpatients University Hospitals West Middlesex	65+	Brief Assessment Schedule (BAS) BSSI	During the past month have you ever felt life wasn't worth living? In the past month have you at any time felt you would rather be dead?	33% 22%	1 month
(Barnow and Linden, 2000)	Berlin Aging Study, population study – Germany (Berlin)	70-105	Hamilton Depression Rating Scale and Geriatric Mental State Examination, Version A (GMS-A)	Feel life is not worth living Wishes he were dead or any thoughts of possible death to self Suicidal ideas or gestures	14.7% 5.4% 1.0%	at the time of study
(Kuo et al., 2001)	Population study Baltimore (Epidemiologic Catchment Area Program	18-65+	One question	Have you ever felt so low you thought of committing suicide?	0.09%	1 year
(Scocco et al., 2001a)	Population Study- Italy (Padua)	65+	Questions (Paykel et al. 1974)	Feeling that life is not worth living, the wish to die, for example, to go to sleep and not wake up again, thought of taking your own life, even though you would never do so, considering taking own life or making plans on how to go about doing so, attempt to take your own life ⇨ One positive answer	6.5% 9.2%	1 month 1 year
(Cook et al., 2002)	EPOCH (Evaluation of Psychogeriatric Outreach in City Housing), African-Americans living in congregate public housing	Average age=73	General Health Questionnaire (GHQ)	Have you felt that life isn't worth living? Have you found yourself wishing you were dead and away from it all? =passive suicidal ideation Have you thought of the possibility that you might do away with yourself? Have you found that the idea of taking your own life kept coming into your mind? =active suicidal ideation	 2.5% 1.4%	Past few weeks
(Scocco and De Leo, 2002)	Population Study – Italy (Padua)	65+	Brief Symptom Inventory WHO data	Thought that life is not worth living Wished for death Thought of taking own life Seriously considered taking own life Attempted suicide Suicide	2.5% 4.2% 2.1% 0.7% 0.1% 0.05%	1 year

(Yip et al., 2003)	General Household Survey – Chinese people living in the community in Hong Kong	60+	Geriatric Mental State Examination, Version A (GMS-A)	Has ever felt suicidal or wished to be dead Has felt suicidal or wished to be dead some time in the last year Has felt suicidal or wished to be dead for at least two weeks in the last month Rejected suicide but has actually wished to be dead because life is a burden Has done something or planned to do something about killing self ⇨ One positive answer	5.5%	
(Alpass, 2005)	Non-probability convenience sample-Small city in New Zealand (men)	65+	Suicidal Ideation Scale	Wish to be dead at least once in the past month Life is not worth living at least once in the past month	5.5% 4.1%	1 month
(Scocco et al., 2006)	Region of north-east Italy Nursing homes	65+		2001	0.030%	1 year
(Raue et al., 2007)	Admissions to the Visiting Nurse Services In Westchester NY (homecare patients)	65+	SCID HRDS	Participants were asked whether they had thought a good deal about death or that life was not worth living, or about hurting themselves	10.6% 1.1%	1 month
(Dennis et al., 2007)	Population study in Great Britain	16-74 years (55-74)	CIS-R (Clinical Interview Schedule)	Have you ever thought that life was not worth living? Have you ever wished that you were dead? Have you ever thought of taking your life, even if you would not really do it? One or more=suicidal ideation	1.3% 3.3% 1.5%	1 year
Shah (2007)						
(Ladwig et al., 2008)	Population sample Augsburg (Germany)	35-84 years (75-84)	PHQ 9	"In the last 2 weeks, have you had thoughts that you would be better off dead or hurting yourself in some way?"	Men: 11.0% Women: 9.9% Increase of SI with age	2 weeks
(Chen et al., 2008)	Community based study Taiwan	60+	Self report survey	Did you wish or want to be dead during the past month?	17.8%	1 month
(Sirey et al., 2008)	Recipients of Westchester County's home meal program	60+	PHQ-9	How often yourself in some way	13.4%	2 weeks
(Scocco et al., 2009)	PROGRES-older people –34 nursing homes in 5 Italian regions	65+	Questions (Paykel et al. 1974)	Have you ever had the feeling that life is not worth living? Have you ever wished to die, for example, to go to sleep and not wake up again? Have you ever thought of taking your own life, even though you would never do so? Have you ever seriously considered taking your own life, or made plans on how to go about doing so?	21.5% 19.2% 4.1% 2.3%	1 month

Suicide attempts

(Lawrence et al., 2000)	Population study Western Australia	60+			0.05%	1 year
(De Leo et al., 2001)	Multinational data, 16 European centres	65+	WHO/EURO Multicentre Study of Suicidal Behaviour	Parasuicide (=an act with non-fatal outcome, in which an individual deliberately initiates a non-habitual behaviour that without intervention from other will cause self-harm or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences)	.061%	5 years
(Kuo et al., 2001)	Population study Baltimore (Epidemiologic Catchment Area Program	18-65+	One question	Have you ever attempted suicide?	0.03%	1 year
(Hawton and Harriss, 2006)	Oxford Monitoring System for Attempted Suicide	15-80+ (50+)		60-64 65-69 70-74 75-79 80+	0.09% 0.08% 0.12% 0.09% 0.06% 0.06% 0.07% 0.08% 0.09% 0.07%	Male versus female

Completed Suicides

(Lawrence et al., 2000)	Population study Western Australia	60+	Western Australian Health Services Research Linked Database	1980-1995 Males Females	 0.023% 0.007%	1 year
(De Leo et al., 2001)	Multinational data, 16 European centres	65+	WHO/EURO Multicentre Study of Suicidal Behaviour	Suicide	.029%	5 years
Harwood et al. (2001)	Berkshire, Buckinghamshire, Northamptomshire, Oxfordshire, Birmingham Case-control	60+		Completed Suicides vs Cases		
(Snowdon and Baume, 2002)	Population Study- Sydney	65+	Coroner's Office	Completed suicides	0.02%	1 year
(Kua et al., 2003)	Population Study Singapore	65+	National department of statistics	1991 1992 1993 1994 1995 1996 1997 1998 1999 2000	0.040% 0.037% 0.036% 0.037% 0.042% 0.028% 0.026% 0.029% 0.019% 0.018%	1 year
(Erlangsen et al., 2003)	Population study Denmark	50+	Register of suicide	1998	0.030%	Present 1 year
(Zeppegno et al., 2005)	Population Study Novara and Verbania (Italy)	65+	Examining Magistrates of the Courts of Justice of Novara and Verbania	1990-2000 Novara Verbania	 0.0026% 0.0014%	1 year
(Abraham et al., 2005)	Comprehensive community health program – South India	55+	Verbal autopsies of all deaths	1994-2002	0.189 %	1 year
(McKeown et	Population Study- U.S.	65+	National Centre	Completed Suicides		1 year

al., 2006)			for Health Statistics	1980 1985 1990 1995 2000 2001 2002k	.018% .020% .021% .018% .015% .015% .016%	
(Chan et al., 2006)	Population Study Hong Kong	65+	Honk Kong Special Administrative Region: Census and Statistics Department and Department of Health	1986-1992 1993-1998 1999-2002	0.0040% ↘ 0.0030%	1 year
(Liu et al., 2006)	Population study Taiwan	65+	Taiwan Department of Health	Completed suicides 1994 2003	 0.024% 0.035%	1 year
(Scocco et al., 2006)	Region of north-east Italy Nursing homes	65+		2001	0.018%	1 year
(Voaklander et al., 2008)	Population Study	66+	British Columbia Vital Statistics	Completed Suicides	.013%	1 year
(Hawton and Harriss, 2008b)	Population Study Oxford City	60+	Office of National Statistics for England and Wales	1195-2004	0.0010%	1 year
(Mezuk et al., 2008)	Suicides in long-term care and community-dwelling persons – New York City	60+	Office of the Chief Medical Examiner of New York City	1990-2005 (raw numbers) Community Dwelling Long-term Care	 1724 47	
(Kapusta et al., 2007)	Population study Austria	65+	Statistics Austria	Completed suicides 1970-2004	0.059%	1 year
(Liu, 2009)	Population study Taiwan	65+	Taiwan Department of Health	Completed suicides 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003	 0.025% 0.024% 0.026% 0.030% 0.034% 0.033% 0.032% 0.036% 0.038% 0.034% 0.035%	1 year

2.11 ADDENDUM: Literature update 2009-2015

In addition to the second chapter, we concisely review important research lines on suicidal thoughts and behaviours (STB) in older adults published between 2009 and 2015 in the following paragraphs.

First, over the last years there is an emerging body of literature on thoughts of death, death ideation and wish to die in later life. Estimates of the prevalence of death ideation have been reported more frequently (e.g. (O'Riley and Fiske, 2014)) revealing that death ideation was found to be more common in later life compared to other age groups. This has raised the question whether it is normative for older adults to have a wish to die. Most studies on this issue indicated that for depressed older adults the presence of a wish to die implies an increased risk for suicide. But there also exists a group of older adults who have a wish to die who are not at risk for suicide. This is a relatively small group of old age persons, confronted with functional limitations, but who endorse only limited depressed symptoms (Van Orden and Conwell, 2015, Van Orden et al., 2013). A challenge for future research is to determine when death ideation or a wish to die are associated with an elevated suicide risk and therefore when intervention is needed (Van Orden and Conwell, 2015).

Second, there is growing evidence that cognitive factors and cognitive impairment, especially with regards to executive functioning (Kiosses et al., 2014), are associated with STB in older adults. Studies indicate that older persons manifesting STB showed more deficits in cognitive control (Gujral et al., 2014), in the decision-making process (Dombrovski et al., 2011), exhibited poorer social emotion recognition and presented more deficits in the social decision making process (Gibbs et al., 2009b). However, the aforementioned cognitive deficit patterns differ with regard to unplanned or planned suicidal behaviour (Van Orden and Conwell, 2015).

Finally, in the last few years, there is the conviction that theory-based research, explaining etiological mechanisms underlying associations between risk factors and STB in older adults, is a necessity in developing and testing suicide preventive interventions. Recently, few research studies have reported theory-driven approaches with regard to STB in older adults. The interpersonal theory of suicide (Van Orden et al., 2010) for example emphasizes that individuals will die by suicide if they have both the desire to be dead and the acquired

capability to enact lethal self-injury. The experience of thwarted belongingness and the perception to be a burden on others are key elements in this theory. The lifespan developmental theory is presented by Fiske and colleague (Fiske and O'Riley, 2015) and posits the importance of control with respect to STB in older adults. In facing challenges in later life, altering strategies for maintaining control over important aspects of one’s life is necessary. Older persons who do not manage to exert control over their life would be at risk for STB. Recently steps have been taking to gather empirical evidence for hypotheses deduced from these theories (e.g. (Cukrowicz et al., 2011)).

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CHAPTER 3

REFLECTIONS OF OLDER ADULTS ON THE PROCESS PRECEDING THEIR SUICIDE ATTEMPT: A QUALITATIVE APPROACH

Published article

Bonnewyn A, Shah A, Bruffaerts R, Schoevaerts K, Rober P, Van Parys H, Demyttenaere K. Reflections of Older Adults on the Process Preceding Their Suicide Attempt: A Qualitative Approach. Death Studies 2014; 38(6-10): 612-618.

ABSTRACT

This study explores the reflections of older adults on the process preceding their suicide attempt. Data were gathered using in-depth interviews with eight older inpatients who had attempted suicide. Grounded theory methodology was used for data analysis. The participants described their life and self as disrupted after experiencing a loss, and also experienced loneliness, loss of control, and an unwillingness to continue living the current life any longer. The findings suggest that the concurrence of these constructs precedes a suicide attempt in later life.

3. REFLECTIONS OF OLDER ADULTS ON THE PROCESS PRECEDING THEIR SUICIDE ATTEMPT: A QUALITATIVE APPROACH

3.1 Introduction

Suicide rates generally increase with age and are the highest in men aged 75 years and over (World Health Organization). This trend has also been observed in Flanders, Belgium. The lethality of suicide attempts (SA) increases with age (Dombrovski et al., 2008, Sisask et al., 2009), perhaps because older people who attempt suicide have a stronger wish to die than younger adults (Sisask et al., 2009, Merrill and Owens, 1990). Risk factors for SAs in later life include psychological, physical, social, cognitive and sociodemographic factors. Psychological factors include depression (Wiktorsson et al., 2010), anxiety and substance abuse (Chan et al., 2004, Liu and Chiu, 2009). Examples of physical factors are disorders, physical disability, and poor physical health (Tsoh et al., 2005, Haw and Hawton, 2008). Social factors include perceived loneliness (Tsoh et al., 2005, Lebret et al., 2006, Wiktorsson et al., 2010), low levels of social contact, and stressful relationships (Beautrais, 2002). Being unmarried or widowed, living alone, low educational attainment, and female gender are some of the sociodemographic characteristics.

The role of reduced cognitive abilities in the decision-making process for SA in later life has recently been examined. Depressed older people attempting suicide were found to have impaired decision making, were more likely to ignore past experiences, and made decisions which were overly present-focused. Moreover, they discounted their reinforcement history to a high degree relative to non-depressed adults, basing their choices largely on recently received reward or punishment (Dombrovski et al., 2010). Also, they poorly recognized social emotions (Szanto et al., 2012), which increased negative perceptions of social interactions.

Qualitative methods to describe the subjective experiences of older adults who attempted suicide were used by Crocker and colleagues (Crocker et al., 2006) for example who interviewed 15 individuals aged 65 and over and found three major pathways leading to a SA: experiencing life as a struggle when growing older; losing control over life; and a feeling of being invisible or disconnected from others.

Research designs have generally focused on risk factors for SA in later life, whereas the experience or meaning of the process leading to a SA has received little attention. Knowledge on how thought processes, feelings and life events, apart from known risk factors of the SA, interact and how these lead from fleeting death ideation to actual SA is incomplete. To understand the experience of older people who attempted suicide, this study used a qualitative approach to explore the process (cognitions, feelings, experiences, meaning, events) related to the decision of attempting suicide. In contrast to previous qualitative studies, we interviewed older adults less than 30 days after the SA to reduce recall bias.

3.2 Method

Participants

The participants were 8 inpatients (6 women, 2 men) who made a SA, which is defined as self-injurious behaviour with a non-fatal outcome, accompanied by explicit or implicit evidence that the person intended to die (American Psychiatric Association, 2003). The mean age was 71,75 years (range: 66-85, standard deviation = 7.00). Four were widowed, three were married, and one was divorced.

Materials

The Mini Mental State Examination (MMSE) (Folstein et al., 1975) was administered as part of the interview to assess global cognitive functioning. A score of 24 or below was used to exclude cognitively impaired subjects from participating in the study (Lezak et al., 2004). This study was approved by the Ethical Committee of the University Hospitals Leuven, Belgium. The Suicide Intent Scale (SIS) (Beck et al., 1974) was administered to determine the suicidal intent of the SA. Only the first 15 of the 20 items on this scale are scored on a range of 0-2, with a total score range of 0–30. Higher scores imply higher suicidal intent.

Procedure

Respondent recruitment was done in an inpatient psychiatric ward (UPC KULeuven, Belgium) and was based on purposeful sampling of information-rich cases (criterion sampling). The multidisciplinary team of the ward assessed those older inpatients with a recent history of a SA who were able to reflect upon and provide rich information on the process towards the SA. Eight out of 10 invited patients participated in the study. One patient

declined and another was excluded because of cognitive impairment (i.e. MMSE score <24) due to electroconvulsive therapy.

The researcher (AB), a member of the multidisciplinary team, invited respondents, explained the voluntary nature of participation, obtained informed consent, guaranteed confidentiality, and conducted interviews within 30 days following the SA. The interviews were audio-visually recorded and lasted from 45 to 115 minutes. AB transcribed all interviews, including spoken language, hesitations and time indications, and imported into NVIVO (2008) for data management.

Initial interviews were built around the research questions defined at the start. Examples of questions were "*What tipped the balance from non-suicidality to suicidality in your life?*" and "*Which factors can be related to the development of the suicidal ideation?*". The focus of interest in the interviews changed slightly following observations from the simultaneous process of data gathering and analysis. Through the coding process of the interview transcripts, specific analytic directions emerged, for example on the domain of physical sensations and the loss of control. Respondents who reported certain physical symptoms or sensations were asked to elaborate on them. After the eighth interview, a saturation point was reached.

Transcripts were analyzed through grounded theory analysis (Glaser and Strauss, 1967), in which themes emerge from the data . The coding process was divided in two phases. First, AB completed a line-by-line coding of the data, keeping as close as possible to the data. Second, larger segments of the text were coded in a more conceptual way using constant comparative methods (Glaser and Strauss, 1967). In the second phase, AB conceptualized relations between substantive codes were conceptualized into theoretical codes in order to integrate these into one theory.

Transcripts were independently coded by AB and KS to increase the credibility and conformability of the coding system. Codes and categories were compared, similarities and discrepancies were reviewed and decisions in the process of substantive and theoretical coding were subject of discussion. Final decisions with regards to these coding discussions were reached together with a third researcher (KDM), who took a reflexive position, to

resolve challenging cases that did not fit the coding system entirely. KS and KDM did not know the interviewed patients.

3.3 Results

The MMSE scores ranged from 27-30, suggesting that all participants showed high cognitive functions. The mean SIS score was 16,88 (range: 9-28 standard deviation: 5.97). This broad range suggests wide variation in suicidal intent among the respondents.

The constructs were subsumed under four major domains: *life and the self felt disrupted by a loss, loneliness, loss of control,* and *unwillingness to continue living the current life.* Disruption, loneliness, and loss were present simultaneously and seemed to circularly affect each other. They preceded the respondents' unwillingness to continue living their current life.

Life and Self Disrupted by Loss

All respondents described a specific life event preceding the SA, i.e. a significant loss that had a tremendous impact on their life (death of a spouse, conflict with a child, a physical illness, physical disabilities, etc.). Some described a feeling of "losing hold on life". Suddenly, everything important in life was perceived to be lost. AG, a 71-year old woman who lost her husband and son within a two month period described her feeling of having lost everything in life as follows:

> AG: *"Yes, I really wanted to be dead. And my daughter was non-existent for me at that time. It is hard for me to explain, but… she and I talked a lot, but the fact that she also was a child of mine did not register with me. It was almost like I had lost everything. Yes, I really was under the impression that now, I have nothing left."*

The loss seemed to have caused a feeling of disruption, leading to a perception that life will never be the same again. Participants perceived life after the loss to be inferior to life prior to the loss.

ES, a 69-year old woman, impulsively tried to end her life because she could not live with the daily functional impairment. Anticipating that life would never be as before made her very anxious and depressed. She perceived her own self and identity as if there was nothing left.

> ES: *"It felt as if I could no longer cope. My greatest fear and biggest problem was that I would no longer be able to do the things which I was able to do before: looking*

after the grandchildren, washing, ironing, everything related to housekeeping. I am no longer able to do that and that is my biggest fear: that I won't be able to do that in the future. I can't do anything anymore, nothing works out; I am no longer of use... I can no longer do the things which I used to do before anyway."

JS, aged 82, widowed and living alone in her own house, also felt that the disruption had not only impacted life, but also the self. Household maintenance tasks became difficult to manage, forcing her to consider going to a nursing home and to request help from her children. JS experienced this drastic change as having an important impact on who she was and on what she considered as important in life, namely independence and autonomy:

JS: *"When I think of having to go to a nursing home… I have a house of my own where I could stay but it is too big to maintain. My biggest concern is that I do not want to trouble the children. To hassle the children for this or that… I feel bad about that. To solve my own problems has always been essential to me. But that is no longer possible. Even if I want to, I am no longer capable of solving everything myself."*

Loneliness

Another important element in the thoughts and feelings of the respondents was the sense of being left to their own devices after the loss, loss of connectivity with others, being unable to share with others, and lack of reciprocity in relationships. The perception of being alone in life and of being disconnected to others was reinforced by not sharing thoughts or feelings with others. Respondents did not want to or did not succeed in their effort to maintain a connection with others, leading to increased loneliness. Sometimes they actively pursued social isolation. JS described this circular process as follows:

JS: *"I was lonely, but I hold myself responsible for that in some way. When the children invited me over for an afternoon, I always said no, let me be, I am fine."*
Sudden silence.
"I always had to ask someone else for help. Although they never said no, I felt, how shall I say, like the odd one out."

DD, a 66-year old widow, described a sudden feeling of intense loneliness as follows:

"Six months after my husband passed away, I really started to realize that…, I am on my own now. The children, they came in and I wanted…. I was troubled by something, I wanted to talk about it, but I could not."

Her husband died of bone cancer after a prolonged illness. She experienced a great sense of loneliness after her husband's death and could not communicate with her children in the same way as she did with her husband. This feeling of loneliness came very suddenly and was overwhelming. Her sense of loneliness was not associated with a lack of emotional or instrumental support from family or others, but was related to feeling alone in the world. DD reported feelings of alienation and disconnection from others in symbolic as well as literal ways:

> *"And then suddenly, on a Sunday, it happened… I woke up and I just could not do it. Normally I would wake up and go to the bathroom…"*
>
> Interviewer: *"What do you mean that nothing worked out anymore? How did it feel?"*
>
> DD: *"It felt like being alone in the world. The feeling of being completely alone persisted for several months. That said, my twin sister, I call her every evening, she did talk a bit with me and that made me feel better. During the day however I felt completely alone. I also live completely by myself. I did not go outside either."*

The sudden feeling of loneliness was shattering dominating cognitions and feelings.

Loss of control

Feelings of exhaustion, anxiety, and of being overwhelmed, took control over body and mind and led to an overall sense of loss of control. All respondents described complete physical exhaustion in the weeks before the SA. They felt tired and completely worn out, and often attributed it to sleep problems: all reported severe insomnia. Although they described this exhaustion as predominantly physical, it was also connected with their emotional wellbeing. For example, CV, an 85-year-old divorced man living alone, suffered from shingles for a few weeks and described complete physical exhaustion as follows:

> *"I was worn out. I had not slept for three nights already. I was completely exhausted. I could not make myself move. Then I tried, with one pill, with two pills and still I could not sleep; and then you take some more and all of a sudden those pills start to work. And something like this becomes something like that* (makes hand gesture*). And that is something I had not considered. I however did say to myself: if it goes wrong, then I will remain asleep and then the misery will be over. (…) Not being able to sleep anymore had sapped my strength. That undermined me completely: my body, my mood and even my mind. It had undermined everything."*

The immediate goal was to get some sleep, even though he took into account that there was a danger of never waking up again.

Similarly, ES described the physical exhaustion as a continuous tiredness, resulting in a lack of taking initiative to perform daily household tasks. The tiredness took total control as if it was omnipresent in her daily life.

> *"I was very tired. Completely exhausted. I did not see a way out anymore. I was tired doing the dishes, I was tired making up my bed. Tired, tired, always tired. But then again, I had almost not slept for months and months on end. I never slept during night time. My eyes hurt so much, I could simply not close them anymore."*

Escaping from life was perceived as a solution to total sleep deprivation.

All respondents reported anxiety symptoms and associated physical experiences. They described their anxiety as free-floating and highly distressing. Symptoms included trembling, shaking, the inability to breathe, and feeling faint. Furthermore, they felt powerless against these symptoms whose long-lasting character contributed significantly to mental and physical suffering. For example, JB, a 66-year-old woman whose son committed suicide, was widowed last year. She reported a continuous feeling of anxiety in the last few months, with periodic moments of intense physical symptoms of tightness in the chest and weakness of the legs. The suffering associated with these painful moments greatly disabled her daily life:

> *"And then I wake up and it's almost like I find myself in a very black environment. Almost like a tunnel, so black. And then I always want to get out of it but I can't. Very frightening. I feel much suffocated then. I am sitting on the edge of the bed then. I can almost not breathe, I tremble, and I can hardly stand on my feet."*

Lack of control over these anxiety symptoms led to a feeling of despair:

> *"Sometimes I think that this situation won't change and that it won't get better."* She cries. *"And that I will keep on trembling… What am I going to do then? What am I going to do if I keep on trembling like that? I don't know. I hope they'll find something someday but I am extremely fearful that it won't get any better. This situation is too difficult."*

Similarly, LS described how anxiety took control over her whole body:

> *"But as I said, it all started with that fatigue because I thought I had developed a heart condition. One night I woke up and thought I was going to die. Palpitations of the heart. I went to see a cardiologist for that reason. All things considered nothing was wrong. The general practitioner suspected it to be caused by the thyroid gland*

> *because that also would explain the restlessness but all blood tests turned out to be positive. Same outcome at the cardiologist so the real issue was here."* Points to head with both fingers. *"And everything I experienced was felt here."* Points to chest. *"In my arms also, a sort of stiffness, I cannot express it otherwise, a real stiffness."*

Initially, she attributed these physical complaints to a physical cause, such as heart failure. Afterwards, she was able to reattribute the palpitations and the feeling of constriction in the chest to a feeling of anxiety.

Respondents mentioned feeling overwhelmed and confused. They used several metaphors: "feeling like a zombie," "it felt in my head as if it was an anthill," "it felt as if it was a muddle in my head" and "I was in a shock". They were unable to integrate their thoughts, and experienced a loss of control over their thoughts as well as a lack of lucidity in the process of reflection. CV described it as follows:

> Interviewer: *"What made you consider the situation in a different light today?"*
>
> CV: *"Because… how shall I say it. That which was under my skin, the tiredness, that pain, because it has been reduced, my thoughts have become clearer again. Now I can think straight again… My thoughts were muddled. By now the muddle has started to disappear again."*

LH, aged 66, broke contact with her daughter after the daughter divorced her husband. In the weeks before she attempted suicide, LH described her state of mind as lacking clear-headedness, implying a great interference in her daily life:

> LH: *"While driving my car I felt like a zombie. And then I told myself to watch out carefully. It was a complete mess up there."* Points to head. *"When I came home [from shopping] my husband asked if I was back already. Because normally I take my time to shop for groceries but this time I only brought the mussels: I had not even found the butter. I experienced it as an anthill up here. I had no headache but it felt heavy."*

JV, aged 67, experienced unbearable pressure on his mind caused by stressful and long-lasting relationship problems with his spouse. He attempted to end his life to get rid of this feeling.

> JV: *"It is your brain which can't cope anymore. Those thoughts: an accumulation of tensions."*

He felt completely overwhelmed by the tension in his head, leading to an inability to think clearly or to reason logically.

Unwilling to continue to live

Respondents described a SA as a way to end the current state of life, which seemed unbearable and unchangeable. JB described her desire to be dead like both her husband and son:

> JB: *"I thought to myself when I went to the cemetery, my two men are cremated and I thought, they are sleeping my two men, they are sleeping. They do not feel sad any longer. I long to be with them and to no longer be among the living anymore."*

JS saw suicide as an alternative to a life with a lack of meaning:

> *"Life to me felt like an obligation: you are supposed to do X, you have to do Y. If that is the case, then what good is it? I wanted to be rid of everything; I wanted to be rid of everything. Nothing more and nothing less. Because I mean…. what's in it for me?"*

CV, likewise, said:

> *"I could no longer imagine continuing… without being able to sleep, to continue living. This is why I wanted to sleep. That was my first intention, to sleep. Should I not wake up anymore, I have had what I had and I won't feel the pain anymore either."*

The intention behind the SA was to end the type of life that was currently being lived. There was no explicit mention of a desire to be dead unless indirectly as an alternative state for the current life.

3.4 Discussion

A first major domain centered on one or more important life events, experienced as a loss which impacted the way respondents lived their lives. These life events, although commonly reported in this age group, were overwhelming, undermining the very foundations of their lives. Life *after* the loss appeared not to be worth living anymore: the only way to end the changed character of life was to end life itself. Moreover, these disruptions not only affected life, but also caused the own self to be broken: they were no longer the same person as before. A constructivist perspective (Neimeyer and Buchanan-Arvay, 2004), conceptualizes identity as a narrative achievement. When confronted with a traumatic loss, one can struggle to position this traumatic event within one's self-narrative, resulting in a fragmented sense of autobiographical continuity through time; as if the traumatic loss disrupts the continuity of the narrative construction of the self (Neimeyer, 2000). A parallel can be drawn with the

experience of the loss preceding a SA where it was impossible for these people who attempted suicide to build a conceptual bridge between the person they once were and the person they had become (Neimeyer, 2009). The loss as such was not categorized as traumatic but its impact on the life they once used to live challenged their entire belief system: the self-evident assumptions which held true for their life were invalidated.

A second major domain included loneliness, partly as a consequence of the loss, partly as a consequence of feeling disconnected and alienated from significant others. The way the respondents described loneliness is similar to existential loneliness, a reactive and transient type, determined and triggered by situational or social factors (Sadler, 1978, Ettema et al., 2010). Our data suggest that the experience of loneliness is not associated with emotional or social support received from others. It rather concerns a feeling of loneliness as such, of not being understood by others, of being alienated from others. The respondents felt that the loneliness was being reinforced by their inclination to isolate themselves and to withdraw from social life.

The construct of loneliness also features in the interpersonal theory of suicide proposed by Joiner (Joiner, 2005). Loneliness is considered as one facet of thwarted belongingness, one of the two central interpersonal constructs (besides burdensomeness). The experience of loneliness and the absence of reciprocally-caring relationships are considered as dimensions of the latent construct of thwarted belongingness (Van Orden et al., 2010). Previous studies have provided preliminary support for the constructs of this theory (Jahn and Cukrowicz, 2011), and the experience of loneliness described by the respondent of the study seems to be aligned with the component of thwarted belongingness.

The concepts of disconnectedness and alienation have been referred to in previous qualitative studies. In a hermeneutical and phenomenological study, meaning in life was related to connectedness to others (Moore, 1997). A study analyzing the experiences of older adults on the pathway to a SA described a similar experience of becoming less visible to others (Crocker et al., 2006). This feeling was further characterized by a sense of isolation and loneliness as well as a general sense of being distanced from and less connected with others. The reported feeling of being on one’s own is congruent with previous quantitative research as well reporting perceived loneliness as a risk factor for SA in later life (Wiktorsson et al., 2010).

The quintessential experience in the third domain was the unbounded free-floating anxiety in the weeks prior to the SA. Reported physical symptoms included: trembling, shaking, or difficulties with breathing. These were consistent with the growing evidence of the association between anxiety symptoms and suicidal feelings ((Diefenbach et al., 2009, Busch et al., 2003). The presence of anxiety symptoms might therefore have been an important factor in the suicidal process, even if these symptoms were not related to a specified anxiety disorder. The association of subsyndromal anxiety symptoms with suicidality among older SAs has also been reported (Liu and Chiu, 2009).

We found that reported anxiety symptoms were related to the experience of being overwhelmed and the inability to integrate one's thoughts. To our knowledge, this is the first study that has found an association between suicidality and the experience of being overwhelmed. However, the experience of being overwhelmed needs to be distinguished from confusion due to cognitive deterioration or due to the presence of dementia. It is a state of mind characterized by a lack of lucidity, impeding reflection and reasoning in a clear way. The presence of both physical anxiety symptoms and the lack of lucidity could be interpreted in light of psychomotor agitation, which has been found to be related to suicide (Busch et al., 2003) in adult inpatients. Future research is needed to further clarify this feeling.

Further, physical exhaustion due to long-lasting insomnia was associated with a high burden on daily life of the respondents. A recent study (Li et al., 2010) reported increased suicidal risk among adult psychiatric patients with nocturnal sleep disturbances. In our study, sleep disturbance negatively impacted their sense of physical wellbeing because physical exhaustion and complete tiredness seemed to take control of daily life. Moreover, their physical exhaustion was closely related to other physical symptoms such as anxiety and lack of lucidity. These different sensations were likely to have a reciprocal and reinforcing effect.

The disrupting experiences of loss, loneliness, and loss of control seemed to result in an unwillingness to continue to live, which resulted in the suicidal act. As the major part of their life had already been lived, these older people found it unimaginable to integrate the loss and loneliness into the previously constructed story of their lives for the remaining time they had left. The quality of their current life was unacceptable and the only way out was to end their life by completing suicide. The inability to integrate a loss in one's past, present and future life

might be mediated by the presence of depressive symptoms or a depressive disorder, which exhausts the drive and mental energy needed in the process of meaning making and reconstruction.

These results highlight the importance to investigate not only the experience of a known risk factor but also the meaning of that experience. Furthermore health professionals should pay particular attention to physical complaints, sleep deprivation, feelings of anxiety, and exhaustion.

This study has several limitations. First, participants were recruited from a psychiatric inpatient ward and they were able-bodied, which sets them apart from the subgroup of frail older adults who are often exposed to somatic multimorbidity. Second, the interviewer was a member of the multidisciplinary team of the ward, introducing potential researcher bias, however steps have been taken to reduce this effect (other researchers did not belong to the team, memo writing was used etc.). However, the role of the interviewer in the team might have affected the course of the interview. A final caveat is that all respondents were hospitalized after the SA. Constructs of these patients might not be transferable to non-hospitalized older adults who attempted suicide.

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CHAPTER 4

ARE GENDER AND LIFE ATTITUDES ASSOCIATED WITH THE WISH TO DIE IN OLDER PSYCHIATRIC AND SOMATIC INPATIENTS? AN EXPLORATIVE STUDY

Published article

Bonnewyn A, Shah A, Bruffaerts R, Demyttenaere K. Are gender and life attitudes associated with the wish to die in older psychiatric and somatic inpatients? An explorative study. International Psychogeriatrics 2015; 26(10):1-10.

ABSTRACT

Background. Death wishes are not uncommon in older persons, and to date, several risk factors have been identified. The presence of these risk factors is insufficient to fully understand why some older people, who are exposed to these, develop a wish to die and why others do not. The purpose of the study was to explore whether purpose in life as well as other life attitudes are associated with a death wish in older males and females.

Methods. The sample comprised 113 older inpatients (from a psychiatric and somatic ward) with a mean age of 74 years. Psychiatric diagnoses were assessed by the SCID-I. Logistic regression analyses estimated the unique contribution of (the interaction between) life attitudes and gender to the wish to die, controlling for sociodemographic variables, depressive disorder, and somatic symptoms.

Results. We observed a statistically significant relationship between life attitudes and the wish to die. Purpose in life and the Purpose in Life*Gender interaction explained significant additional variance, controlling for other variables, in the prediction of the wish to die. Purposelessness in life might therefore be an important correlate of a wish to die, especially in older men, independently from sociodemographic and clinical features.

Conclusions. In assessing a wish to die in older adults, life attitudes need to be taken into account, besides the presence of a depressive disorder and/or somatic health. More specifically, finding or maintaining a purpose in later life might be an important feature in the prevention of the wish to die, especially in male persons.

4. ARE GENDER AND LIFE ATTITUDES ASSOCIATED WITH THE WISH TO DIE IN OLDER PSYCHIATRIC AND SOMATIC INPATIENTS? AN EXPLORATIVE STUDY

4.1 Introduction

Suicide in later life needs to be considered as an important health concern, given the high rates of late life suicide in industrialized countries. Suicide rates in Flanders, Belgium, are comparable to other countries and are at least as high as in other age groups. Between 2005 and 2009 mean yearly suicide rates of 23.65 (age group 60-74 years) and 28.16 (age group 75+years) per 10,000 people have been reported (http://www.zorg-en-gezondheid.be/Cijfers/Sterftecijfers/Cijfers-oorzaken-van-sterfte/Zelfdoding-per-leeftijd).

Death ideation, death wish, suicide ideation, and suicide attempts are risk factors for completed suicide in later life (Rowe et al., 2006), but it remains difficult to determine how the different components of the suicidal spectrum are related to each other (Pompili et al., 2013). Additionally, the presence of a death wish in an older person is different in comparison to adult persons: the awareness of the inevitability of death and the realization of moving inexorably closer to death become more prominent through the process of ageing (Maxfield et al., 2007). Thoughts of death and death wishes are not uncommon in older persons and there is growing evidence that thoughts of death in some cases might be part of a nonpathological ageing process, whereas in other cases, these might reflect the presence of underlying psychopathology (Szanto et al., 2013). To date, several risk factors of a death wish in older persons have been identified: female gender (Raue et al., 2010, Rurup et al., 2011), the presence of a mental disorder (mostly depression - (Rurup et al., 2011)), a somatic disorder (Yip et al., 2003, Kim et al., 2006, Lapierre et al., 2012), the report of pain (Lapierre et al., 2012), and a small social network (Rurup et al., 2011). Research examining the role of living arrangements and civil status revealed mixed results (Lapierre et al., 2012). However, the presence of these risk factors is insufficient to fully understand why some older people, exposed to these risk factors, develop a wish to die and why others do not. Including skills and coping styles specifically relevant to the process of ageing might be required as the particular challenge for older adults is the large number of changes and transitions that start to occur by ageing: in later life, life stress and challenges rapidly accumulate (Ryff et al., 1998). From a theoretical perspective on successful ageing, the importance of meaning in life has been identified as a significant predictor of well-being in later life (e.g., (Baltes and

Carstensen, 1996)). The following definition of meaning in life is often referred to: “the cognizance of order, coherence, and purpose in one’s existence, the pursuit and attainment of worthwhile goals, and an accompanying sense of fulfillment” (Reker and Wong, 1988). Indeed, the experience of meaning in life has been identified as a significant predictor of well-being in later life in empirical studies. Higher levels of meaning in life were associated with both psychological wellbeing (Kaji et al., 2010) and life satisfaction (Ju et al., 2013, Steger et al., 2009). In contrast, loss of meaning in life was associated with late-life depression (Kaji et al., 2010), with symptoms of distress (at least, in older patients with cancer (Vehling et al., 2011)), with increased fatigue and with overall symptom experience (in patients with cancer and cancer survivors (Thompson, 2007)). Purpose in life, as a subcomponent of global meaning in life, was correlated with fewer functional limitations and higher levels of perceived health (Krause, 2009).

Theories on successful ageing and research on the associations between wellbeing and meaning in later life both justify that meaning in life and broader life attitudes contribute to the presence of a death wish in later life. Since previous findings indicate that gender is both associated with a wish to die (Raue et al., 2010) and with different dimensions of life attitudes (Pinquart, 2002), it is relevant to explore whether gender interacts with different dimensions of life attitudes on the presence of the wish to die in older adults. Therefore the first aim of the current study was to explore whether meaning in life as well as other life attitudes are associated with a wish to die in older adults, independently from the presence of sociodemographic and clinical factors. Second, we explored a gender effect in the association between life attitudes and the wish to die.

4.2 Material and Methods

4.2.1 Subjects

Since both somatic disorders and psychiatric symptoms were found to be robust risk factors for suicidality in later life, all patients admitted to the medical wards of Internal Medicine (May 2011 – January 2012), and in the wards of Old age Psychiatry of the University Hospital Leuven (UPC KU Leuven), of Psychiatrische Kliniek Broeders Alexianen Tienen, of M.C. St.–Jozef Munsterbilzen (May 2011 – May 2013) were consecutively recruited to participate in this cross-sectional study. 164 patients were invited to participate in the study, 51 individuals refused to take part. Cognitively impaired (a score of 24 or below on MMSE)

and psychotic inpatients were excluded from participating in the study. A total of 113 patients (72 psychiatric inpatients, 41 somatic inpatients) provided their informed consent and completed all study questionnaires. The study was approved by the University Hospital's review board.

4.2.2 Measures

Dependent variable

The wish to die was assessed with the BSSI (Beck et al., 1988) (Beck Scale for Suicide Ideation). The BSSI is a 21-items measure of which only the first 19 are scored. The final two items are used to record previous suicide attempts. All items consist of three response options, ranging from 0 to 2. The time frame is the week preceding the interview. The first five items serve as an initial screening of suicide ideation. The focus of the present study was limited to the answer to the screening item: "I have no wish to die" (score 0), "I have a weak to moderate wish to die" (score 1) and "I have a strong wish to die" (score 2). This item was converted to a binary score, where "I have no wish to die" equalled 0 and where "I have a weak to moderate, or a strong wish to die" equalled 1.

Independent variables

Mental disorders. Mental disorders were assessed by means of the SCID, the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; SCID v2.0; (First et al., 1997)), a semi-structured clinical interview designed to assess Axis I disorders based on DSM-IV criteria. The SCID was used to assess Major depressive episode (12 months) and anxiety disorders (12 months) (including social phobia, generalized anxiety disorder, panic disorder, agoraphobia and specific phobia).

Life attitudes. The Life Attitude Profile-Revised (LAP-R) is a multidimensional measure of global meaning, i.e. the degree of existential meaning and purpose in life and the strength of motivation to find meaning and purpose (Reker, 1992). It consists of 48 items, all scored on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". The LAP-R is scored and profiled on six dimensions: Purpose (e.g. "In thinking of my life, I see a reason for my being here" or "My past achievements have given my life purpose and meaning"), Coherence (e.g. "I have the sense that parts of my life fit together into a unified pattern"), Goal Seeking (e.g. "I am eager to get more out of life than I have so far"), Existential Vacuum (e.g. "I find myself withdrawing from life with an 'I don't care' attitude"), Life Control (e.g. "When it comes to important life matters, I make my own decisions"), Death

Acceptance (e.g. “Even though death awaits me, I am not concerned about it”). For the purpose of this research, the Death Acceptance dimension, referring to the acceptance of death as a natural aspect of life was not administered. The LAP-R has good psychometric qualities in terms of factor structure and reliability and shows good concurrent and discriminant validity (Reker, 1992).

Covariates

The included sociodemographic factors are: age, gender and civil status (married, widowed, divorced or single). Somatic symptoms were assessed by the SCL-90 (Symptom Checklist) (Derogatis, Lipman, & Covi, 1973) – Somatization subscale. Psychometric evaluations reports have indicated good internal consistency (alpha coefficients .77 to .90), good test–retest reliability, and good concurrent, construct, and discriminant validity (Derogatis, 1983).

Other variables

Mini Mental State Examination (MMSE). Cognitive functioning was assessed by means of the MMSE (Folstein et al., 1975). A score of 24 or below was used to exclude cognitively impaired subjects from participating in the study (Lezak et al., 2004).

4.2.3 Statistical analyses

The Pearson correlation test was used to determine the strength of the relationships between the independent variables. Due to the high association between the subscales of the LAP-R, separate logistic regression analyses for each subscale of the LAP-R were performed to assess the association of the presence of a wish to die with gender and the different LAP-R domains and the interactions between those. A logistic regression analysis was completed to identify the contribution of the interaction between life attitudes and gender to the wish to die, independently from sociodemographic variables and from the presence of a depressive disorder or somatic symptoms. The 'explained variance' of the logistic regression models was calculated by means of Nagelkerke's R^2 and the goodness of fit by means of the Hosmer and Lemeshow goodness-of fit test (Hosmer and Lemeshow, 2000). Predicted probabilities of a wish to die in low and high purpose in life and gender (using parameters from the fully interacted model) were estimated. Analyses were performed with SPSS version 21.0. Two-tailed P values were reported. Because the study was mainly of an explanatory nature, the level of significance was set to $\alpha = 0.05$.

4.3 Results

As shown in table 1, 52 male and 61 female persons were included in the study. The mean age of the sample was 73.61 years (range 62-89 years). The mean age in the persons with a wish to die was 3 years higher than that of the persons without a wish to die. The overall mean score on MMSE was 27.85, without differences in mean scores between both groups. Half of the included persons (49.6%) were married.

Table 1. Descriptives for the group with a WTD and the group without WTD (Equal variances not assumed).

	WTD			
	Yes	**No**	**T/X²**	**Comparison Groups (p=)**
Age	75.30 (46)	72.45 (67)	-2.857	0.022
Gender				
Male	28.3% (32)	17.7% (20)	0.201	0.654
Female	31.0% (35)	23.0% (26)		
Somatic Symptoms	26.78	22.43	2.543	P=0.013
LAP-R				
LAP Purpose	31.217	40.636	-5.811	P=0.000
LAP Coherence	31.544	39.646	-4.330	P=0.000
LAP Existential Vacuum	31.804	26.773	3.662	P=0.000
LAP Goal Seeking	29.348	30.682	-0.792	P=0.430
LAP Life Control	38.630	43.546	-3.040	P=0.003
MMSE	27.65	27.99	1.006	0.317
Mental Disorders				
MDE 12 months			19.600	P=0.000
1	57.47% (39)	42.6% (29)		
0	15.6% (7)	84.4% (38)		
Any Anxiety Disorder 12 months			1.241	P=.265
1	52.97% (9)	47.1% (8)		
0	38.5% (37)	61.5% (59)		

Table 2 provides a summary of the logistic regression models. Gender and life attitudes were entered in Step 1 and the interaction between these independent variables was added in Step 2. We found a main effect of the subscales Purpose (p=.000), Coherence (p=.000), Existential Vacuum (p=.001) and Life Control (p=.004) where higher scores on Purpose, Coherence and Life Control are associated with a lower risk of the presence of the wish to die, while a higher score on Existential Vacuum was associated with a higher risk.

After adding the interaction variable Life Attitude*Gender, the main effects of Purpose (p=.007), Coherence (p=.024) and Existential Vacuum (p=.048) remained significant; only the interaction variable Purpose*Gender explained significant variance (p=.028), independently from Gender and Purpose. The interaction of Gender by other Life Attitudes was not significant.

In the regression model including Gender, Purpose, and the interaction term Purpose*Gender, main effects of Purpose and Gender were present. Lower Purpose is associated with a higher probability of the wish to die. The interaction effect of Purpose*Gender is reflected in a significant effect of Purpose on the wish to die in women (with every unit increase in Purpose, the log (odds) of wish to die decreases with 0.085 units) and in men (with every unit increase in Purpose, the log(odds) of wish to die decreases with 0.239 units).

Table 2. Multivariate logistic regression models with death wish as dependent variable and Life Attitudes, Gender, and Life Attitude X Gender as independent variables. Step 1 is a logistic regression with gender and life attitudes as independent variables. In Step 2, the interaction term of Life Attitude X Gender is included as well.

	Step 1					***Step 2***				
	B	**Wald**	**Significance level**	**Exp(B)**	**95% Confidence Interval**	**B**	**Wald**	**Significance level**	**Exp(B)**	**95% Confidence Interval**
Gender	0.115	0.066	0.798	1.122	0.466-2.699	**5.775**	**4.795**	**0.029**	321.991	1.833-56565.072
LAP Purpose	**-0.133**	**21.754**	**0.000**	0.876	0.828-0.926	**-0.085**	**7.344**	**0.007**	0.918	0.864-0.977
Gender x LAP Purpose	-	-	-	-	-	**-0.154**	**4.818**	**0.028**	0.857	0.747-0.984
Goodness of Fit	2.736		0.950			3.779		0.275		
Gender	-0.187	0.197	0.657	0.830	0.364-1.892	2.138	1.411	0.235	8.481	0.249-288.644
LAP Coherence	**-0.088**	**14.578**	**0.000**	0.916	0.876-0.958	**-0.061**	**4.912**	**0.024**	0.939	0.889-0.992
Gender x LAP Coherence	-	-	-	-	-	-0.065	1.761	0.184	0.937	0.851-1.032
Goodness of Fit	10.156	0.254				3.098		0.928		
Gender	-0.037	0.008	0.929	0.964	0.432-2.150	-1.852	0.972	0.324	0.157	0.004-6.233
LAP Existential Vacuum	**0.093**	**10.387**	**0.001**	1.098	1.037-1.162	**0.070**	**3.896**	**0.048**	1.073	1.000-1.151
Gender x LAP Existential Vacuum	-	-	-	-	-	0.061	0.987	0.321	1.063	0.942-1.199
Goodness of Fit	7.191		0.516			8.709		0.274		
Gender	-0.156	0.159	0.690	0.855	0.397-1.844	-0.321	0.049	0.824	0.725	0.043-12.324
LAP Goal Seeking	-0.017	0.538	0.463	0.983	0.940-1.028	-0.019	0.398	0.528	0.981	0.925-1.041
Gender x LAP Goal Seeking	-	-	-	-	-	0.005	0.014	0.906	1.005	0.919-1.100
Goodness of Fit	7.850		0.448			6.374		0.605		
Gender	-0.126	0.097	0.755	0.882	0.400-1.943	2.689	1.479	0.224	14.722	0.193-1123,125
LAP Life Control	**-0.073**	**8.386**	**0.004**	0.930	0.885-0.977	-0.046	2.139	0.144	0.955	0.899-1.016
Gender x LAP Life Control	-	-	-	-	-	-0.068	1.677	0.195	0.934	0.842-1.036
Goodness of Fit	8.086		0.425			4.556		.804		

In table 3 we show results of the logistic regression models with Gender, MDE (major depressive episode), anxiety disorder, somatic symptoms on the one hand and Life Attitude and Life Attitude*Gender on the other hand. Overall, this model had a Hosmer and Lemeshow Goodness of Fit χ 2 value of 5.521 (p =.701). The model explained 56% of the pseudovariance (Nagelkerke R^2) in the wish to die as dependent variable. While Gender, MDE, and the interaction Gender X Purpose were the most important predictors of the wish to die, the presence of somatic symptoms was significant as well.

Table 3. Logistic regression with death wish as dependent variable and sociodemographic, clinical variables and LAP Purpose as independent variables (MDE= Major Depressive Episode; LAP= Life Attitude Profile).

	B	*Standard error*	*Wald*	*Significance level*	*Exp(B)*	*95% Confidence Interval*
Gender	**9.006**	**3.402**	**7.009**	**0.008**	8152.851	10.367 - 6411620.781
Age	**0.113**	**0.047**	**5.871**	**0.015**	1.120	1.022 - 1.227
MDE 12 months	**-2.236**	**0.672**	**11.065**	**0.001**	0.107	0.029 - 0.399
Any Anxiety disorder 12 months	0.048	0.733	0.004	0.984	1.049	0.249 - 4.411
SCL90 Somatization	**0.079**	**0.032**	**6.206**	**0.013**	1.082	1.017 - 1.152
LAP Purpose	-0.061	0.037	2.799	0.094	0.940	0.679 - 0.957
Gender x LAP Purpose	**-0.215**	**0.088**	**6.053**	**0.014**	0.806	0.875 - 1.011
Constant	-8.125	4.104	3.920	0.048	0.000	
	Chi Square		Significance level			
Hosmer Lemeshow	5.521		0.701			
Test of Model Coefficients	59.851		0.000			
Cox & Snell R^2	0.417					
Nagelkerke R^2	0.563					
c-statistic	0.883					

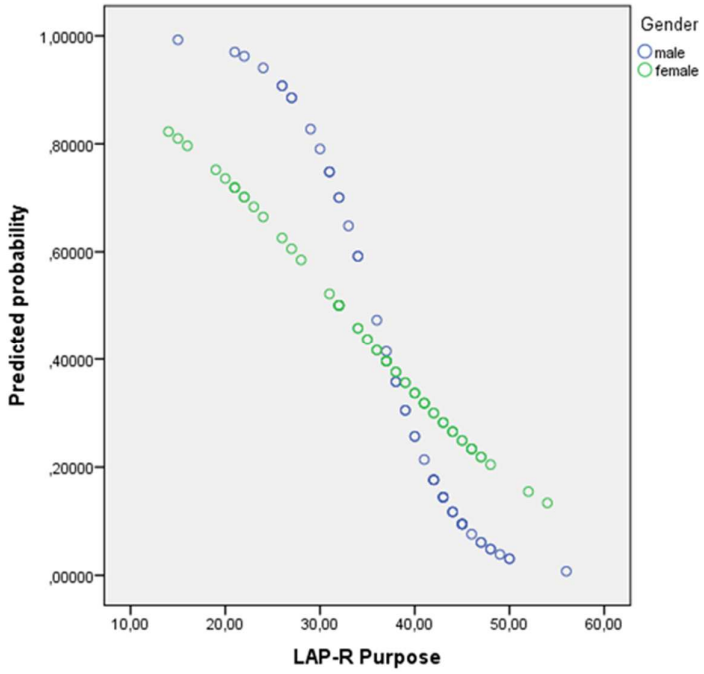
In table 4 the fully-adjusted models for Existential Vacuum, Life Control and Coherence are presented. The interaction term with gender was not included since this term did not have an additional significant contribution in the association with a wish to die, besides gender and the life attitudes Existential Vacuum, Life Control and Coherence. The Hosmer–Lemeshow goodness of fit test indicated that the multivariate model including clinical factors and Life Control was not valid. Existential Vacuum had no added value on top of sociodemographic and clinical factors in the association with the presence of a wish to die. The independent variable Coherence on the other hand had an additional significant contribution to the association with a wish to die (p=0.002).

Table 4. Logistic regression with death wish as DV and sociodemographic, clinical variables and LAP-subdimensions as IV.

	B	***SE***	***Wald***	***Significance level***	***Exp(B)***	***95% Confidence Interval for Exp(B)***
Gender	0.646	0.496	1.697	0.193	1.908	0.722-5.044
Age	0.072	0.040	3.230	0.072	1.074	0.994-1.161
MDE 12 months	**-2.358**	**0.604**	**15.244**	**0.000**	0.095	0.029-0.309
Any Anxiety disorder 12 months	0.210	0.645	0.106	0.744	1.234	0.349- 4.367
SCL90 Somatization	**0.083**	**0.029**	**8.292**	**0.004**	1.086	1.027-1.149
LAP Life Control	-0.051	0.029	3.015	0.083	0.951	0.898-1.007
Constant	-5.311	3.490	2.315	0.128	0.005	
	Chi Square		**Significance level**			
Hosmer Lemeshow	19.221		0.014			
Test of Model Coefficients	38.641		0.000			
Cox & Snell R²	0.294					
Nagelkerke R²	0.397					
c-statistic	0.823					
Gender	0.711	.530	1.801	0.180	2.035	0.721-5.747
Age	**0.104**	**.043**	**5.776**	**0.016**	1.110	1.019-1.209
MDE 12 months	**-2.410**	**.631**	**14.575**	**0.000**	0.090	0.026-0.310
Any Anxiety disorder 12 months	0.187	.688	0.074	0.786	1.206	0.313-4.645
SCL90 Somatization	**0.082**	**.030**	**7.304**	**0.007**	1.085	1.023-1.151
LAP Coherence	**-0.088**	**.028**	**9.558**	**0.002**	0.916	0.867-0.968
Constant	-6.563	3.417	3.688	0.055	0.001	
	Chi Square		**Significance level**			
Hosmer Lemeshow	5.936		0.654			
Test of Model Coefficients	48.594		0.000			
Cox & Snell R²	0.357					
Nagelkerke R²	0.482					
c-statistic	0.857					
Gender	0.652	0.494	1.747	0.186	1.920	0.730-5.051
Age	**0.081**	**0.039**	**4.208**	**0.040**	1.084	1.004-1.172
MDE 12 months	**-2.260**	**0.621**	**13.236**	**0.000**	0.104	0.031-0.353
Any Anxiety disorder 12 months	0.465	0.659	0.498	0.480	1.593	0.437-5.799
SCL90 Somatization	**0.081**	**0.029**	**7.962**	**0.005**	1.084	1.025-1.147
LAP Existential Vacuum	0.051	.034	2.199	0.138	1.052	0.984-1.125
Constant	-9.797	3.492	7.874	0.005	0.000	
	Chi Square		**Significance level**			
Hosmer Lemeshow	8.060		0.428			
Test of Model Coefficients	37.765		0.000			
Cox & Snell R²	0.288					
Nagelkerke R²	0.389					
c-statistic	0.819					

Figure 1 shows the predicted probability of the wish to die as a function of Gender and Purpose of life. The plot lines show that when Purpose in Life increases, the predicted probability of the wish to die decreases. The slope of the line is significantly steeper in men compared to women, illustrating the interaction effect of purpose and gender on the wish to die: for men with a low score on LAP-R Purpose, the probability of the occurrence of a wish to die is highest.

Figure 1. Predicted Probabilities of wish to die of interactions between gender and Purpose in Life.



4.4 Discussion

A first finding of the study was that life attitudes were associated with the wish to die in older adults: lower scores on Purpose, Coherence and Life Control were related to an increased probability on the presence of a wish to die. Second, the Purpose in Life*Gender interaction explained additional of variance in the occurrence of the wish to die in older adults, independent from sociodemographic (such as age and gender) and clinical factors (such as depression and the presence of a somatic symptoms).

The current study found that concerns related to the meaning in life contributed significantly to the presence of the wish to die, independently from known risk factors (such as depression

or physical symptoms). This suggests that the aforementioned life attitudes play a significant role in the onset of a wish to die in later life. Previous research has described the meaning making process as a coping strategy to stressful life events (Park and Folkman, 1997). Growing older is often a stage in life where stress accumulates. When confronted with stressful events and when becoming aware of the finiteness of life, existential concerns have a particular importance in the experience of psychological wellbeing and in the development of the wish to die in older adults. Similar results were found by Heisel and colleagues (Heisel and Flett, 2008), indicating that meaning in life, though assessed with a single item ("I feel that my life is meaningful"), was predictive for the scores on a multidimensional measure of suicide ideation. This explains the significant added variance when controlling for depression and for perceived health.

Two subcomponents of the experience of global meaning, such as Purpose in life or Coherence, were found to be associated factors of the wish to die. The observed association between a lower level of purpose in life and the wish to die are in line with previous findings. Meaninglessness (feeling like life has no meaning or purpose) evolved as a main theme in suicidal older adults (Moore, 1997), and an association between meaninglessness and suicidality was found in adults as well (Edwards and Holden, 2001). Since meaninglessness is also associated with depression, the question may be asked to what extent purpose in life is merely an indicator for depression rather than a distinct construct. In this sense it is relevant that in our study Purpose in life explained additional variance in the prediction of the wish to die. A study with very old persons revealed an inverse association between the degree of purpose in life and depression but also determined that a high purpose in life did not serve as protection against the risk of developing depression (Hedberg et al., 2010). Thus, depression and purpose in life seem associated, although the latter seems to be a distinct construct (Boyle et al., 2009), explaining additional variance in the occurrence of a wish to die. It would be interesting to explore in future research whether the association between purposelessness and the presence of a wish to die is obtained both in those with and without depression, which was not possible in the present study due to the limited sample size. The inverse association between the presence of a wish to die and a sense of Coherence after adjusting for depression such as found in our study with older adults, has been reported in several studies on adult populations (e.g. (Sjostrom et al., 2012)). However this association did not remain significant after a 3 year follow-up. Since ageing increases the likelihood of being confronted with an experience of loss, older persons may feel as if previous assumptions related to life, such as

meaning in life, are disrupted. Consequently, idiosyncratic beliefs about the purpose and coherence of life might be challenged by ageing, reflected by the evidence that purpose in life decreases by increasing age (e.g. (Pinquart, 2002)). Not age itself might be the cause of change in purpose in later life, but age can be considered as a proxy of age-associated losses and declines, such as loss of health, retirement or a decrease of social relationships (Pinquart, 2002). However, failing to maintain a sense of purpose and coherence in life in later life is not solely determined by the losses themselves. One's personality (Pinquart, 2002) and the meaning of the loss (Bonnewyn et al., 2014) might be relevant factors as well in the meaning making-process and will influence whether an emerging wish to die presents itself or not.

High levels of purpose in life reduce the predicted probability of the wish to die in both men and women, but lower levels of purpose in life increase the predicted probabilities of the wish to die in men more than in women. Previous findings indicate that older men maintain a higher level of purpose in life in general (Boyle et al., 2009). Women are likely to be more vulnerable to lose purpose in life because they are more exposed to risk factors such as widowhood, chronic health problems and lower socioeconomic status (Pinquart and Sorensen, 2001). However men of the present cohort may experience a discontinuation of purpose in later life as well due to the consequences of their retirement. The fact that that men maintain a higher level of purpose in later life and that they less often report a wish to die compared to older women (Rurup et al., 2011) stresses the implication of the found interaction effect of purpose and gender on the wish to die. A minimal level of purpose in life is relevant to men in particular for them to maintain a wish to live. Consequently, when a male loses purpose in life, a critical situation might arise, especially when other risk factors of suicidality (e.g. depression, the presence of a somatic disorder,…) also occur. Since losing purpose in life is associated with increased mortality (Krause, 2009), the interaction effect between gender and purpose in life on the wish to die in older adults might partially explain this association, mediated by self-destructive behaviours such as suicide and by self-neglected behaviours with severe health consequences (Dyer et al., 2007), but this explanation is speculative. Further research is needed to confirm this hypothesis and to elaborate on the effect of gender in this regard. However, the experience of purpose in life might be modifiable and especially in older men it would be worthwhile to examine whether and how purpose in life can be enhanced. It would be of particular relevance to explore how men can be helped to successfully cope with the loss of sources of purpose in life.

Several limitations of the study should be noted. First, participants were able-bodied, which sets them apart from the subgroup of frail older adults who are often exposed to somatic multimorbidity. Second, meaning in life is hard to define and it is multidimensional (Reker, 2000). The use of highly intercorrelated subscales to measure meaning in life hampered the overall testing of several sources of meaning in one model. Third, the choice to limit the data to older inpatients implies that results might not be generalizable to home-dwelling older adults who do not express help-seeking behaviour (for mental or somatic problems). A fourth limitation was the exploratory character of the study, which implies that the findings are partly data-driven. Hypothesis-testing studies are needed to replicate these findings in similar samples. A last limitation concerns the cross-sectional nature of the study, implying that conclusions regarding causality cannot be drawn. The observed associations between purpose in life and the wish to die may be bidirectional and therefore the issue of directionality or temporality of effects cannot be answered.

To summarize, this study has added to our understanding of the wish to die in older adults by incorporating variables in analyses that also address the life attitudes of older adults. Purposelessness might be an important correlate of a wish to die in older men, on top of sociodemographic and clinical risk factors (such as depression and somatic symptoms). Finding or maintaining a purpose in later life might therefore be an important feature that could prevent the development of a death wish, especially in male persons.

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CHAPTER 5

ARE RELIGIOUSNESS AND DEATH ATTITUDES ASSOCIATED WITH THE WISH TO DIE IN OLDER PEOPLE?

Published article

Bonnewyn A, Shah A, Bruffaerts R, Demyttenaere K. Are religiousness and death attitudes associated with the wish to die in older people? International Psychogeriatrics 2015; 187: 66-72.

ABSTRACT

Background. A wish to die is common in older persons and is associated with an increased mortality. Several risk factors have been identified, but the association between religiousness and a wish to die in older adults has been underexplored. The association between death attitudes and the presence of a wish to die has not been explored yet. The aim of this study is to explore the relationship between religiousness and death attitudes on the one hand and wish to die on the other hand, adjusting for clinical factors such as the presence of depression or somatic disorder.

Methods. The sample comprised 113 older inpatients (from a psychiatric and somatic ward) with a mean age of 74 years. Psychiatric diagnoses were assessed by the SCID-I and logistic regression analyses estimated the unique contribution of religiousness and death attitudes to the wish to die, controlling for sociodemographic variables, depressive disorder, and somatic symptoms.

Results. Both religiousness and death attitudes were associated with a wish to die in univariate models. Adding these variables in a multivariate logistic hierarchical model, death attitudes remained significant predictors but religiousness did not; 55% of the pseudovariance of the wish to die was explained by these variables, with an effect size of 0.89. Major depressive episode, somatic symptoms, Fear of Death, and Escape Acceptance were the most important predictors of the wish to die.

Conclusion. This study suggests that *how* death is perceived by older adults partly determines whether they have a wish to die. There may be a clinical, patient-oriented benefit in discussing with older patients about how they perceive death as this can play a role in the early detection (and prevention) of death or suicide ideation and associated behaviours in older adults.

5. ARE RELIGIOUSNESS AND DEATH ATTITUDES ASSOCIATED WITH THE WISH TO DIE IN OLDER PEOPLE?

5.1 Introduction

Suicide rates are particularly high in later life compared to other age groups. Suicide rates in older people are around 1.5 times higher than the European average of adult suicide rates (http://www.euro.who.int/en/what-we-do/health-topics/noncommunicable-diseases/mental-health/facts-and-figures). A common model to interpret the suicidal process is to place the different clinical manifestations of suicidality along a continuum, with death ideation or a wish to die on one end and suicide on the other end of the continuum (O'Connell et al., 2004). This implies that a wish to die can be considered as a significant precursor of a suicide attempt and of completed suicide (Baca-Garcia et al., 2011). Moreover, the presence of a wish to die in later life is associated with an increased overall mortality, with hazard ratios in the 1.62-1.71 range (Raue et al., 2010). Epidemiological studies revealed that a wish to die is quite common among community-dwelling older persons: European studies reported that 10-20% of older adults had a wish to die. To date, several risk factors have been identified: older persons with a wish to die are more likely to meet criteria for depression (Rurup et al., 2011a) or for a somatic disorder (Lapierre et al., 2012). They also report higher levels of pain (Lapierre et al., 2012) and they possess a more restricted social network (Rurup et al., 2011a).
The context of death ideation and a wish to die may be different in older age groups compared to younger persons, which eventually may result in age-specific correlates. Through the process of ageing, the inevitability of death and the realization of moving inexorably closer to death become more prominent (Maxfield et al., 2007). Time spent living and time left before death is significantly different in older persons compared to younger people. On the one hand, attitudes towards death might be different in later life. The salience of death in older life may elicit different death attitudes, either more positive attitudes towards death (i.e. a neutral attitude, an accepting attitude towards death either as a possibility to escape present life or as the positive outlook of an afterlife) or negative ones (i.e. fear of death or an avoidant attitude towards death). On the other hand, when death becomes salient, religiousness might affect the coping with mortality in later life. These age-specific factors, i.e. attitudes towards death and religiousness, are underexplored and uncharted to date in prediction models of the wish to die in later life. This leaves us with three important limitations in existing knowledge. First, the association between religiousness and a wish to die in older adults has only been explored to a

limited degree. Furthermore different measures and conceptualizations for religiousness (religious attitudes, religious behaviour, religious activities) and for suicidality have been used. The participation in religious activities reduced the odds of suicide significantly (Nisbet et al., 2000). Religious attendance and private religious activities were associated with a reduced occurrence of suicidal ideation in depressed older adults (Rushing et al., 2012). Older adults with high intrinsic religiousness reported greater death ideation (Jahn et al., 2012). Second, the contribution of death attitudes in a wish to die in later life remains unclear. There are indications that death attitudes can be associated with age itself: older people reported less death anxiety than middle aged people (Gesser et al., 1987) and were more concerned about the existence of an afterlife (Thorson and Powell, 1994). Third, previous research indicates that death attitudes and religiousness in older adults are mutually related but that this relationship is complex (Neimeyer et al., 2004), due to the multidimensional nature of both religiousness and death attitudes. A moderate positive correlation has been found between intrinsic religiousness on the one hand and acceptance of death (Daaleman and Dobbs, 2010) and belief in the afterlife (Ardelt and Koenig, 2006, Falkenhain and Handal, 2003) on the other hand. Research for a meaningful relationship between different measurements of religiousness and death anxiety has provided conflicting findings (Wink and Scott, 2005, Falkenhain and Handal, 2003).

Against these limitations, the aim of this study is to explore the relationship between religiousness and death attitudes on the one hand and the wish to die on the other hand, adjusting for clinical factors such as the presence of depression or somatic symptoms. Specifically, the research questions are: (a) Do death attitudes function as predictors of the wish to die in older people?, (b) Is religiousness associated with a wish to die in older adults?, (c) Do death attitudes and religiousness have additional power, over and above clinical factors, in the prediction of the presence of the wish to die in older adults?

5.2 Material and methods

5.2.1 Subjects

Since both somatic disorders and psychiatric symptoms were found to be robust risk factors for suicidality in later life, all patients admitted to the medical wards of Internal Medicine (May 2011 – January 2012), in the ward of Old age Psychiatry of the University Hospital Leuven (UPC KU Leuven), of Psychiatrische Kliniek Broeders Alexianen Tienen, and of

M.C. St.–Jozef Munsterbilzen (May 2011 – May 2013) were consecutively recruited to participate in this cross-sectional study. 164 patients were invited to participate in the study, 51 individuals refused to take part. Cognitively impaired (a score of 24 or below on MMSE) and psychotic inpatients were excluded from participating in the study. A total of 113 patients (72 psychiatric inpatients, 41 somatic inpatients) provided their informed consent and completed all study questionnaires. The study was approved by the University Hospital's review board.

5.2.2 Measures

Dependent variable

The wish to die was assessed with the BSSI (Beck Scale for Suicide Ideation - (Beck et al., 1988)). The BSSI is a 21-items measure of which only the first 19 are scored and where the final two items are used to record previous suicide attempts. All items consist of three response options, ranging from 0 to 2. The first five items serve as an initial screening of suicide ideation. The focus of the present study was limited to the answer to the screening item: "*I have no wish to die*" (score 0), "*I have a weak to moderate wish to die*" (score 1) and "*I have a strong wish to die*" (score 2). This item was converted into a binary score, where "*I have no wish to die*" equalled to 0 and where "*I have a weak to moderate, or a strong wish to die*" equalled to 1. The time frame related to this question was the week preceding the interview.

Independent variables

Death attitudes. The DAP-R (Death Attitudes Profiles-R) (Wong et al., 1994) was used to assess five death attitudes: Fear of Death (e.g. "*The prospects of my own death arouses anxiety in me*"), Death Avoidance (e.g. "*I avoid thinking about death altogether*"), and three positive attitudes towards death, including Neutral Acceptance of Death (e.g. "*Death should be viewed as a natural, undeniable, and unavoidable event*"), Approach Acceptance of Death (e.g. "*I believe that I will be in heaven after I die*") and Escape Acceptance of Death (e.g. "*Death will bring an end to all my troubles*"). The scale of all the items ranged from 1 (strongly agree) through 7 (strongly disagree). A scale score was computed by dividing the total score by the number of items of the scale. The DAP-R has good psychometric qualities in terms of factor structure and reliability and it shows good validity (Wong et al., 1994).

Religiousness. The Duke University Religion Index, DUREL (Koenig et al., 1997), was administered to assess religiousness. The five-item questionnaire investigates the frequency of

religious attendance (one item), the frequency of participation in private religious activities (one item) and intrinsic religiousness (three items; e.g. "*My religious beliefs are really what lie behind my whole approach to life*"). A higher score means a higher rate of religiousness. The instrument demonstrated good internal consistency and moderate to good convergent validity.

Major Depressive Episode (MDE) was assessed through the SCID, the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; SCID-I; (First et al., 1996)). The SCID is a semi-structured clinical interview designed to assess Axis I diagnoses based on DSM-IV criteria. The SCID was assigned both to the psychiatric as to the somatic inpatients.

Somatic symptoms were assessed with the SCL-90 (Symptom Checklist) (Derogatis et al., 1973) – Somatization subscale. Psychometric evaluations reported good internal consistency (alpha coefficients 0.77 to 0.90), good test–retest reliability, and good concurrent, construct, and discriminant validity (Derogatis et al., 1976).

Other variables

The following sociodemographic factors were included: age, gender (male, female), civil status (married, widowed, divorced, single), living condition (living alone, living together). Cognitive functioning was assessed by means of the Mini Mental State Examination (MMSE - (Folstein et al., 1975) where a cutoff score of 24 was used to exclude cognitively impaired subjects from participating in the study.

5.2.3 Statistical analyses

Because the independent variables were expected to be correlated, the possibility of multicollinearity in the regression models was evaluated with variance inflation factor statistics. The Pearson correlation test was used to determine the strength of the relationships between the independent variables. Based on these analyses we excluded predictors that were highly correlated because we aimed to minimize the problem of multicollinearity and to decrease the number of predictors. Univariate logistic regression analyses and Pearson correlation analyses were conducted in order to describe univariate relationships between the dependent variable and death attitudes and religiousness. We ran hierarchical logistic regression analysis with Wish to Die as the dependent variable (DV). Potential demographic covariates were entered in the first block, depression and somatic symptoms in the second block, and life attitudes, death attitudes, and religiousness in the third block. The internal validity of the model was tested by the Hosmer–Lemeshow test. Cox and Snell's and

Nagelkerke pseudo-R^2 were also calculated. As an overall indication of the quality of the regression models we calculated the concordance-statistic (or, C-statistic, i.e. the area under the Receiver Operating Characteristic curve). C-statistics between 0.7 and 0.8 are generally considered as acceptable and between 0.8 and 0.9 as excellent. Analyses were performed with SPSS version 22.0 (IBM Corp). Because the study was mainly of an explanatory nature, the level of significance was set to $\alpha = 0.05$.

5.3 Results

Descriptive statistics are presented in Table 1. The study included 52 male and 61 female persons. The mean age of the sample was 73.61 years (range 62-89 years). The mean age in the persons with a wish to die was 3 years higher than that of the persons without a wish to die. The overall mean score on MMSE was 27.85, without differences in mean scores between both groups. Half of the included persons (49.6%) were married.

Table 1. Descriptives of the sample (n=113).

		No WTD (n=67)	***WTD (n=46)***	t/X^2	***p***
Age		72.45 (67)	75.24 (46)	-2.857	.022
Gender	Male	28.3% (32)	17.7% (20)	.201	.654
	Female	31.0% (35)	23.0% (26)		
Civil Status	Married	32.3% (35)	18.2% (21)	1.085	.781
	Widowed	20.2% (21)	12.1% (15)		
	Divorced	8.1% (9)	4.0% (7)		
	Single	2.0% (2)	3.0% (3)		
Living Condition	Living Alone	19.2% (22)	18.2% (23)	3.353	.067
	Living Together	43.4% (45)	19.2% (23)		
MMSE		27.99	27.65	1.006	.317

Univariate logistic regression analyses indicated that Somatic Symptoms, MDE, Religiousness (Private), Escape Acceptance, and Fear of Death variables were significant predictors of the Wish to Die (table 2). Higher scores on Religiousness (private) and Escape Acceptance were associated with a higher risk of the Wish to Die, whereas lower scores on Fear of Death and Religiousness (private) were associated with a higher probability of the Wish to Die.

Table 2. Univariate logistic regression analyses with a wish to die as dependent variable and MDE, somatic symptoms, religiousness, and death attitudes as independent variables.

	B	*SE*	*Wald*	*Sign*	*Exp(B)*
Somatic symptoms (SCL 90)	**.056**	**.023**	**6.153**	**.013**	**1.058**
MDE12	**1.988**	**.479**	**17.235**	**.000**	**7.300**
DAP-Fear of Death	-.276	.136	4.134	.042	.759
DAP-Death Avoidance	-.187	.099	3.601	.058	.829
DAP-Neutral Acceptance	-.174	.242	.520	.471	.840
DAP-Approach acceptance	-.121	.106	1.311	.252	.886
DAP-Escape Acceptance	**.602**	**.153**	**15.491**	**.000**	**1.827**
Religiousness Public	-.227	.126	3.239	.072	.797
Religiousness Private	**.200**	**.100**	**3.976**	**.046**	**1.221**
Religiousness Intrinsic	-.024	.047	.255	.613	.977

Both variance inflation factors (VIF) analyses and inspections of the correlation matrix of the independent variables (table 3) suggested high associations between the measures of religiousness. The largest VIF was 2.705 (DUREL-subjective dimension) and the highest intercorrelations were found between the measures of religiousness (i.e. r >0.50). Therefore, we opted to include only one measure of the DUREL-Private dimension (based on the univariate regression analyses). The intercorrelation between Fear of Death and Death Avoidance is high (i.e. 0.496).

Table 3. Correlation matrix of independent variables.

Correlation	*DAP-Fear of death*	*DAP-Death avoidance*	*DAP-Neutral acceptance*	*DAP-Approach acceptance*	*DAP-Escape acceptance*	*Religiousness Public*	*Religiousness Private*	*Religiousness Intrinsic*
DAP-Fear of death	1	-	-	-	-	-	-	-
DAP-Death avoidance	.496**	1	-	-	-	-	-	-
DAP-Neutral acceptance	-.163	.033	1	-	-	-	-	-
DAP-Approach acceptance	.141	.113	.009	1	-	-	-	-
DAP-Escape acceptance	.030	-.103	.001	.212*	1	-	-	-
Religiousness Public	.068	.054	.034	.547*	.050	1	-	-
Religiousness Private	-.076	-.040	.029	.530**	.245*	.533**	1	-
Religiousness Intrinsic	.091	-.077	-.064	.661**	.167	.637**	.629**	1

*Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

The results of the first stage of the multivariate hierarchical regression analysis are reported in Table 4 in the column headed “Model 1”. The sociodemographic variables Age, Gender, and Living Conditions accounted for about 8% of the observed pseudovariance. When MDE and Somatic Symptoms were added in Model 2, the explained pseudovariance increased to 38%. The R^2 further increased to 55% when Death Attitudes and Religiousness were entered in Model 3. The final multivariate model showed a good fit (Hosmer-Lemeshow test $p > 0.05$) and an overall classification accuracy of 82.1% was obtained. The c-statistic of the multivariate model was high (c=0.89), suggesting an excellent discriminative ability of the final model. Religiousness and death attitudes were both associated with a wish to die in univariate models. By adding them in the logistic hierarchical model, death attitudes were significant predictors but religiousness was not. MDE, Somatic Symptoms, Fear of Death, and Escape Acceptance were the most important predictors of the Wish to Die. Of all significant predictors in the final model, only the association between Fear of Death and Wish to Die showed an inverse relationship (b=-0,464).

Table 4. Hierarchical multivariate regression analysis predicting the wish to die.

	Model 1				***Model 2***				***Model 3***			
Variables	**b**	**SE**	**Wald**	**Sig**	**b**	**SE**	**Wald**	**Sig**	**b**	**SE**	**Wald**	**Sig**
Age	-,270	,459	,347	,556	-,876	,578	2,295	,130	-,662	,680	,947	,331
Gender	,062	,032	3,678	,055	,075	,038	3,852	,050	,059	,045	1,722	,189
Living Conditions	-,643	,466	1,902	,168	-,410	,564	,529	,467	-,253	,651	,150	,698
MDE12	-	-	-	-	**2,485**	**,585**	**18,041**	**,000**	**2,537**	**,703**	**13,009**	**,000**
Somatic Symptoms (SCL90)	-	-	-	-	**,085**	**,028**	**8,996**	**,003**	**,083**	**,032**	**6,753**	**,009**
DAP-Fear of Death	-	-	-	-	-	-	-	-	**-,464**	**,221**	**4,421**	**,036**
DAP-Death Avoidance	-	-	-	-	-	-	-	-	-,011	,160	,004	,947
DAP-Neutral Acceptance	-	-	-	-	-	-	-	-	-,228	,371	,380	,538
DAP-Approach acceptance	-	-	-	-	-	-	-	-	-,359	,188	3,629	,057
DAP-Escape Acceptance	-	-	-	-	-	-	-	-	**,589**	**,208**	**7,998**	**,005**
Religiousness Private	-	-	-	-	-	-	-	-	,088	,179	,243	,622
Hosmer-Lemeshow test	16.936 (p=.031)				5.825 (p=.667)				7.391 (p=.495)			
ΔR² Cox & Snell	0.060				.278				.403			
ΔR² Nagelkerke	.081				.375				.545			
c-statistic (95% CI)	.648				.810				.885			
% correct classification	62.5 %				72.3%				82.1%			

5.4 Discussion

The current study was the first to examine the relationship between death attitudes, religiousness, and the wish to die in older inpatients. Fifty five percent of the variance of the wish to die, with an effect size of 0.89, was explained by adding death attitudes and religion in a predictive model, on top of common predictors such as depressive episodes or somatic symptoms.

Death attitudes, Escape Acceptance and Fear of Death in particular, predicted the wish to die in older patients, even after controlling for somatic symptoms and depression. First, a high score on Escape Acceptance was associated with an elevated risk for a wish to die. This Escape Acceptance reflects an attitude of death as an escape from the present life: a wish to be dead can therefore be considered as a wish for an alternative to a dreadful existence. Despite the fact that Escape Acceptance is considered as a "positive death attitude", it might be more appropriate to interpret it in a context of death ideation and suicidality as a "negative life attitude". This interpretation is congruent with earlier reported motives by older persons who attempted to complete suicide, namely the wish to escape from an intolerable situation or to gain relief from an unbearable state of mind (Dennis et al., 2007). The wish to die may be interpreted as a wish to terminate the present life (Bonnewyn et al., 2014). Older people often report their current life situation as being unacceptable, feeling they have no control over their situation and progressively "give up" trying (Rurup et al., 2011b). Other components of the positive death attitude Death Acceptance (like the perception of death as a gateway to an afterlife - Approach Acceptance - or Neutral Acceptance) were not associated with a wish to die. In contrast with Escape Acceptance, these components bear less on the perceived quality of the present life and therefore might be less relevant in the development of a wish to die in later life. Second, a wish to die was negatively determined by Fear of Death: older persons with lower fear of death were more likely to have a wish to die, which is congruent with results of previous studies. Fear of death and of killing oneself were found to be important deterrents of suicide ideation in depressed older adults (Britton et al., 2008) and non-depressed suicidal Chinese older men reported fear of death as a reason for continuing to live (Tsai et al., 2012). In a study determining the acceptability of a full range of end-of-life decision options in later life, fear of death contributed significantly to the decision process, beyond the effect of demographic or health variables (Cicirelli, 1997). While Fear of Death in literature on death attitudes is considered as a "negative death attitude", the disappearance of

fear of death might be interpreted as a possible alert signal, specifically in older depressed persons with a somatic vulnerability.

We also found that private religiousness (participation in private religious activities) was associated with a wish to die in the univariate analysis, but not in the multivariate analyses. The lack of a unique contribution of religiousness in the multivariate analysis might be due to an overlap between the different dimensions of religiousness included in our study and Approach Acceptance (intercorrelations between .530 and .661), which is compatible with previous findings in studies with adults (Dezutter et al., 2009), with chronically ill, older adults (Daaleman and Dobbs, 2010), and older hospice patients (Neimeyer et al., 2011). In other words, the different dimension of religiousness are closely related to death attitudes of older persons (Daaleman and Dobbs, 2010) and seem to have an impact on the wish to die in older persons. The non-significant bivariate association between religious attendance and the wish to die might be explained by the assumption of lower public religious activities, given that the participants were inpatients. The presence of depressive symptoms was found to affect these relationships as well, but since the present study was cross-sectional in nature, longitudinal research is needed to further investigate the unique and interacting contribution of these factors to the presence of the wish to die.

In line with previous research, depressive disorder was the most important predictor of death ideation in older inpatients (Rurup et al., 2011a). The report of somatic symptoms was associated with the wish to die and is congruent with a robust association between suicide and the presence of a somatic illness (Juurlink et al., 2004). A meta-analysis in older adults showed a positive correlation between the presence of a non-life-threatening illness, physical disability on the one side and fear of death on the other side (Hundsdoerfer and Wink, 2005). We could not confirm this pattern as we found that both higher levels of physical symptoms and depression and lower fear of death were predictive for a wish to die. This might be due to the multivariate character of the analysis whereby the interaction between physical symptoms, depression, and fear of death has an effect on the wish to die. It is plausible that a wish to die as an escape from the present life occurs when the root of the distress is something other than the fear of death. Moreover, high fear of death might function as a threshold to develop a wish to die in older adults exposed to risk factors such as somatic symptoms and depression. In our study sample which was characterized by high levels of depression and somatic symptoms, a wish to die might have already been developed, explaining the lower levels of fear of death.

Future longitudinal research is needed to further disentangle the impact of these factors on the presence of the wish to die.

The present study has several limitations. First, the sample size is limited; results must be replicated in larger samples. Second, due to the limited heterogeneity of the dependent variable and to the limited sample size, we were forced to reform the dependent variable into a binary variable, implying that information on suicidal ideation and behaviours was not incorporated in the study. It would therefore be relevant to include different levels of the suicidal spectrum as dependent variables in future research designs. Third, the choice to limit the data to older inpatients means that results might not be generalizable to home-dwelling older adults reporting lower rates of depressive symptoms.

Since the wish to die in older inpatients is associated with particular death attitudes, it is relevant to explore how death is perceived. The perception of fear of death or of death as an escape acceptance has an additional predictive power in the presence of a wish to die in older adults. Besides religiousness (Neimeyer et al., 2011), death attitudes may be considered as relevant in the broader context of dealing with salience of death in later life. It is relevant to note that an elevated level of Escape Acceptance and a reduced level of Fear of Death in older depressed persons can be interpreted as a significant correlate of a wish to die. There is a clinical patient-oriented benefit in asking older depressed patients about how death is perceived as this might play a role in the early detection (and prevention) of death and suicide ideation and associated behaviours in older adults.

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CHAPTER 6

FACTORS DETERMINING THE BALANCE BETWEEN THE WISH TO DIE AND THE WISH TO LIVE IN OLDER ADULTS. AN EXPLORATIVE STUDY

Article accepted for publication

Bonnewyn A, Shah A, Bruffaerts R, Demyttenaere K (2015). Factors determining the balance between the wish to die and the wish to live in older adults. An explorative study. Accepted for publication in International Journal of Geriatric Psychiatry.

ABSTRACT

Background. The "Internal Struggle Hypothesis" (Kovacs and Beck, 1977) suggests that suicidal persons may have both a wish to die and a wish to live. The current study investigates whether the three groups typology -"wish to live (WTL)", "ambivalent (AMB)" and "wish to die (WTD)"- is determined by common correlates of suicidality and whether these groups can be ordinally ranked among somatic and psychiatric inpatients.

Methods. The sample comprised 113 older inpatients. Discriminant analysis was used to create two functions (combining social, psychiatric, psychological, and somatic variables) to predict the assignment of older inpatients into the groups WTL, AMB, WTD.

Results. The functions "Subjective Well-being" and "Social Support" allowed us to assign patients into these three distinct groups with good accuracy (66.1%). "Subjective Well-being" contrasted the groups WTD and WTL and "Social Support" discriminated between the groups WTD and AMB. "Social Support" was highest in the AMB group.

Conclusions. Our results suggest a simultaneous presence of a wish to live and a wish to die in older inpatients, and also that the balance between them is determined by "Subjective Well-being" and "Social Support". The AMB-group showed the highest scores on "Social Support", suggesting that the groups WTL-AMB-WTD cannot not been situated on a one-dimensional continuum.

6. FACTORS DETERMINING THE BALANCE BETWEEN THE WISH TO DIE AND THE WISH TO LIVE IN OLDER ADULTS. AN EXPLORATIVE STUDY

6.1 Introduction

Death ideation, suicide ideation, and suicide attempts are risk factors for completed suicide in later life (Rowe et al., 2006, Oquendo et al., 2007) but the relation between the different components of the suicidal process is still unclear (Pompili et al., 2013). For example, only a minority of the older persons with suicide ideation effectively proceeds to a suicide attempt or to completed suicide. The transition from ideation to plan and eventually to an attempt may be explained by factors beyond the mere presence of common risk factors (such as mental or physical disorders). The psychological concept of an “internal struggle” between the wish to die and the wish to live has been proposed to explain additional variability in suicidal behaviour in adult persons with a wish to die. Initially, the “internal struggle hypothesis (ISH)” was developed in 1977 by Kovacs and Beck (Kovacs and Beck, 1977). This hypothesis suggests that suicidal adult persons have a simultaneous wish to live and wish to die. The wish to live and the wish to die may be interpreted as distinguishable subjective phenomena, deduced by the finding that the majority of suicide attempters reported “an internal debate” about whether to live or to die. The ISH was investigated in different adult study populations such as psychiatric outpatients (Brown et al., 2005), internet users (Harris et al., 2010), outpatients of mental health centres (Corona et al., 2013), and psychiatric inpatients (O'Connor et al., 2012). Implicit evidence for the internal struggle hypothesis was also found in a study in which underlying motives of suicide attempts were investigated: all suicide attempters (between 14 and 70 years of age) who reported a wish to die also reported at least one other ‘non-death’ motive (McAuliffe et al., 2007). An additional argument that indirectly supports the ISH was the validation of a three groups typology of suicidal patients (wish to die (WTD) – ambivalent group (AMB) – wish to live (WTL)). The hypothesis of an ordinal nature of this typology was supported by the finding that various differentiating variables could be identified, such as hopelessness, overall level of functioning, and reasons for living (O'Connor et al., 2012). The association between a three groups-typology and suicide risk has also been studied. Consistent with the internal struggle hypothesis, the discrepancy between a patient’s wish to live and wish to die was a determining factor of suicide risk: when the

orientation towards dying dominates, the risk increases (Corona et al., 2013, O'Connor et al., 2012, Harris et al., 2010, Brown et al., 2005).

There is implicit evidence for the validation of ISH in older adults. The presence of a struggle between life and death was reported by older adults in exploring their subjective experiences of suicidal ideation (Wu et al., 2012). However, to our knowledge, ISH has not been explicitly tested in older adults. Hence, the purpose of the current study was twofold. First, because there is growing consensus that thoughts of death might be part of normal ageing in some cases, whereas it might indicate an underlying psychopathology in other cases (Szanto et al., 2013), we investigate whether the proposed typology of suicidality is applicable to older adults with mental and/or somatic disorders. Second, we investigate whether an ordinal nature of this typology is reflected in differences in variables, which are presumed to be robust risk factors for suicidality in later life.

6.2 Material and Methods

Subjects

All patients admitted to the medical wards of Internal Medicine (May 2011 – January 2012) and of Old Age Psychiatry of the University Hospital Leuven (UPC KU Leuven), of Broeders Alexianen Tienen, of MC-St. Jozef Munsterbilzen (May 2011 – May 2013) were eligible to participate in this cross-sectional study. 164 patients were invited to participate and were informed on the background, goals, and aims of the study, 51 individuals refused to take part. A total of 113 patients provided their informed consent to participation and completed all study questionnaires. The study was approved by the University Hospital's review board.

Measures

Dependent variable

The wish to live and the wish to die were assessed by means of the BSSI (Beck Scale for Suicide Ideation) (Beck et al., 1988). The BSSI is a 21-items measure of which only the first 19 are scored. The final two items are used to record previous suicide attempts. All items consist of three response options, ranging from 0 to 2. The time frame to which the items relate is the week preceding the interview. The first five items serve as an initial screening of suicide ideation. The focus of the present study was limited to the answer to the first two screening items: "I have no wish to die/live" (score 0), "I have a weak to moderate wish to

die/live" (score 1) and "I have a strong wish to die/live" (score 2). Three distinct groups (those wishing to live, those wishing to die and the ambivalent individuals) were created based on the wish to live/wish to die index. The methodology to create this index was described by Brown and colleagues (2005). This index was calculated by reversing the wish to live score and by subtracting this score from the wish to die score. This index, which ranges from -2 to 2 (with higher scores indicating stronger orientation towards death), was then trichotomized in three distinct groups: a group 'wish to die (WTD)' (index score =2), a group 'ambivalent (AMB)' (index score ranges from -1 to 1), a group 'wish to live (WTL)' (index score =-2).

In order to assess the severity of the depressive symptoms, the 10-item clinician-rated MADRS rating scale (Montgomery Asberg Depression Rating Scale) was administered (Montgomery and Asberg, 1979). Items are rated from 0 (none) to 6 (severe).

Cognitive functioning was assessed by means of the MMSE (Mini Mental State Examination) (Folstein et al., 1975). A score of 24 or below was used to exclude cognitively impaired subjects from participating in the study (Lezak et al., 2004).

The MSPSS is a 12-item scale which assesses perceptions of social support adequacy received from family, friends or a significant other (Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). Items are rated on a 7-point scale (1=very strongly disagree; 7=very strongly agree). Good internal reliability and strong factorial validity was demonstrated, confirming the three subscale-structure (family, friend, significant other) (Zimet et al., 1990).

Functional limitations were assessed by the Instrumental Activities of Daily Living Scale (Lawton and Brody, 1969). The inter-rater and test-retest reliability were estimated on 0.99 and 0.90 respectively. The Cronbach's alpha estimating the internal consistency was 0.86.

Somatic symptoms were assessed by the SCL-90 (Symptom Checklist) (Derogatis et al., 1973) – Somatization subscale. Psychometric evaluations reports have indicated good internal consistency (alpha coefficients .77 to .90), good test–retest reliability, and good concurrent, construct, and discriminant validity (Derogatis et al., 1976).

Life Satisfaction was assessed by the Life Satisfaction Index (LSI) (Neugarten et al., 1961). The total scale score is based on the number of subjective agreements with items measuring the individual's own evaluation of their present and past life, their satisfaction, and their happiness (possible range: 0-20). The LSI exhibited adequate reliability (Wallace and Wheeler, 2002).

Analyses

First, we examined whether significant differences were found between the groups (WTD – AMB – WTL) and the independent variables using ANOVA and Chi Square tests. Because our purpose was to identify the linear combination of social, psychiatric, psychological, and somatic variables (allowing to strongly distinguish between older adults with a wish to live, a wish to die, or an ambivalent wish (k= 3)), the discriminant analysis created two function equations (k-1) with inclusion of independent variables with (borderline) significant differences between groups. Homogeneity of variance was tested with Box's M test (with the null hypothesis that the group variance-covariance matrices are equal). The structure matrix was used to label the functions. Standardized canonical discriminant function coefficients gave an indication of the importance of independent variables (0.30 is served as the cutoff between important and less important variables). Analyses were performed with SPSS version 22.0.

6.3 Results

113 (52 male and 61 female) patients were included in the study, with a mean age of 73.61 years (range 62-89 years). The overall mean score on MMSE was 27.85, without differences in mean scores between the groups. Half of the included persons (49.6%) were married. Sixty four persons were assigned to the group WTL, 36 persons to the group AMB and 13 to the group WTD.

The mean differences between scores on Somatic symptoms, MADRS, MSPSS, and the LSI (table 1) suggest that these variables may be good discriminators of the balance between WTL and WTD. Differences on IADL scores were borderline significant, and therefore we decided to include this variable in the discriminant analysis as well. Discriminant analysis created two function equations (k-1) with age, MADRS, Somatic symptoms, MSPSS Other, MSPSS Family, MSPSS Friends, LSI and IADL as independent variables. Box's M test (equality of

covariance matrices) was 97.32 (F=1.08, p=.302), suggesting that the covariance matrices did not differ between groups formed by the dependent variable.

Table 1. Tests of equality of group means for the predictor variables in the discriminant function analysis.

	WTL	***'AMB***	***WTD***	***Group Differences (df, F, p)***		
				DF	F	p
Age	72.61	75.14	74.31	2	1.923	.151
MMSE	27.98	27.72	27.54	2	.499	.609
Somatic symptoms	**22.67**	**24.97**	**29.83**	**2**	**3.627**	**.030**
IADL	7.30	7.08	7.21	2	2.406	.059
MADRS	**9.31**	**20.85**	**23.42**	**2**	**25.500**	**.000**
MSPSS Family	**22.59**	**21.19**	**15.46**	**2**	**7.491**	**.001**
MSPSS Friends	**20.33**	**18.75**	**9.08**	**2**	**14.088**	**.000**
MSPSS Significant Other	**24.02**	**19.69**	**15.31**	**2**	**12.327**	**.000**
LSI	**11.53**	**7.38**	**4.98**	**2**	**18.484**	**.000**

Wilks' lambda in table 2 indicated two significant functions (p<.01). The examination of the structure matrix (table 3) revealed that MADRS, LSI, MPSS Family, and MSPSS Friends stand out as the most important variables. The MADRS is the most important and unique contributor to Function 1 (indicated by the canonical structure coefficients), whereas MSPSS Family and MSPSS Friends are the most important and unique contributors to Function 2 (indicated by the structure matrix and canonical structure coefficients in table 3). The structure matrix (table 3) suggested that we can interpret the first discriminant function as an index of "Subjective Well-being" as depressive symptoms, lower life satisfaction, the absence of a significant other, and higher levels of somatic symptoms discriminated between the group WTL and the group WTD. The second discriminant function can be referred to as an index of "Social Support".

Table 2.Wilks' lambda and canonical correlation for the three groups.

Test of functions	***Wilks' lambda***	***X^2***	***df.***	***P***
1 through 2	.446	82.840	16	.000
2	.829	19.205	7	.008

Table 3. Correlation of predictor variables with discriminant functions.

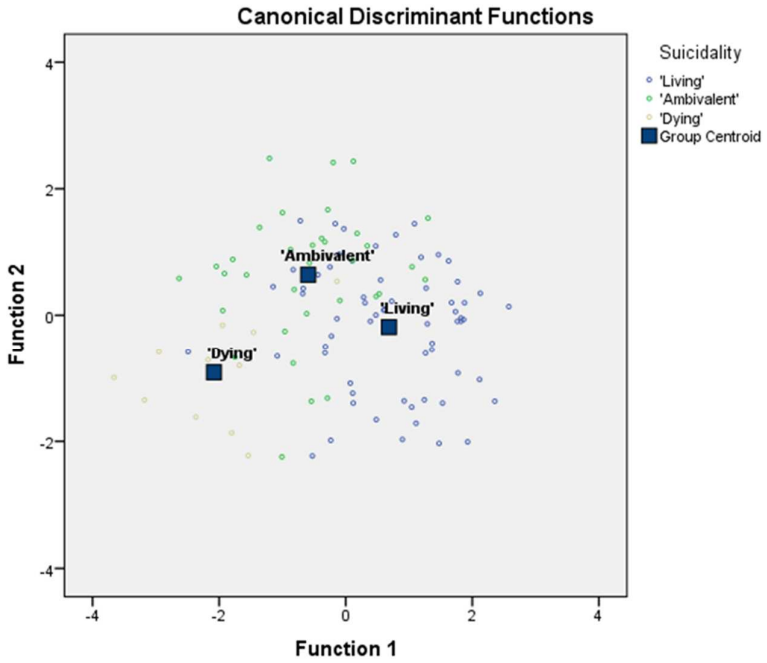
	Standardized Canonical Discriminant Function Coefficients		***Structure matrix***	
Variable	**Function 1**	**Function 2**	**Function 1**	**Function 2**
Age	.176	.323	-.152	.263
Somatic symptoms	-.333	-.281	-.261	-.195
IADL	.391	.362	.227	.212
MADRS	-.728	.216	-.714	.428
MSPSS Family	.117	.557	.350	.393
MSPSS Friends	.202	.641	.465	.511
MSPSS Significant Other	.267	-.305	.496	-.002
LSI	.106	-.492	.598	-.293

The examination of the group centroids (table 4) suggested that "Subjective Well-being" discriminates between older patients with a WTL and older patients with a WTD and that "Social Support" contrasts the WTD-group with the AMB-group, which is visually depicted in figure 1. "Social Support" was highest in the AMB-group.

Table 4. Functions at group centroids.

Groups	***Function 1***	***Function 2***
"Wish to live"	.728	-.140
"Ambivalent"	-.691	.573
"Dying"	-1.863	-.888

Figure 1. Plots of three group centroids on two discriminant functions derived from risk factors in a two-dimensional space.



The cross-validated classification results revealed that 66.1% of the respondents were classified correctly. The group WTL was classified with better accuracy (81.0%) than the AMB group (44.1%) or the WTD group (50.0%). Press's Q-statistic, a test for the discriminatory power of a classification matrix when compared to a chance model, was also significant. The Q-statistic for the model was 46.9425 which exceeds the critical value of 6.63 ($p < .01$).

6.4 Discussion

The main goal of this study was to investigate whether a typological distinction based on the ratio of a wish to live versus a wish to die is applicable to older inpatients with psychiatric and/or somatic symptoms. Our findings showed that we were able to predict the assignment into three distinct groups with good accuracy (WTL, AMB, WTD). The ordinal nature of this typology was reflected in the differences between predictive variables (i.e. depressive symptoms, life satisfaction, support of a significant other) which are assumed to play a role in the development of suicidality in later life. Nonetheless, this ordinal rank was not reflected in the levels of social support received from family and/or friends, given the fact that the AMB-group was not situated between the WTL- and WTD-groups on the second function "Social Support".

The discriminant analysis revealed two functions in the assignment of patients to the three-class typology. The first function is referred to as "Subjective Well-being", which should be interpreted as life conditions, their subjective apprehension, but also life satisfaction, mental health, and physical health. This supports prior research in which a negative association was found between well-being and suicidality in older adults (e.g.(Awata et al., 2007)). That somatic symptoms and a depressive disorder are robust risk factors of suicidality in later life (Conwell et al., 2011) is in line with the finding of this study that these variables have high discriminant power in discerning older adults with a wish to live or with a wish to die. The second function refers to an index of "Social Support". Previous research already emphasized the role of social support in suicidality in older adults (Almeida et al., 2012, Rushing et al., 2013), but we add to this existing knowledge that the perception of social support received from family and friend is particularly relevant to the ambivalent group. Indeed, older adults with a wish to die may experience a simultaneous wish to live and wish to die if they perceive social support from family and friends. This finding explains the discriminant power of these variables between the AMB- and the WTD-group. That the ordinal nature of the three groups typology is not reflected in both functions, but that the AMB-group scores highest on the "Social Support" function, suggests that the development process of the wish to die is complex and that this process must be situated on a multidimensional continuum.

The importance of "Life Satisfaction" in the prediction of the presence of the wish to live or the wish to die is in line with previous findings where satisfaction in life was predictive for

suicidal ideation in older adults in residential home care (Malfent et al., 2010) and in older African Americans residing in public housing sites (Cook et al., 2002). We can assume a high correlation between life satisfaction and depressive symptoms in older adults (Dezutter et al., 2013), which explains the limited unique contribution of Life Satisfaction to the first function of Subjective Well-being.

We also found that patients from the AMB-group were systematically classified with lower accuracy compared to the other groups. The centroid of the AMB group on the first function (i.e. the most important one) falls in between the other groups which explains this finding statistically. In addition, the size of the cloud of the plots around the AMB centroid on the two functions shows the highest variability of this group on the included risk factors. A clinical interpretation of this finding may be that ambivalence towards life and death in older adults might evolve in any direction because of an interplay of the different risk factors. The simultaneous presence of a wish to live and a wish to die may thus be a step in the process towards suicidal behaviour. As the severity of suicidality fluctuates over time (De Leo et al., 2005), an ambivalent wish might evolve progressively to a certain wish to die or even suicidal ideation. The finding that known risk factors of suicidality (like depressive symptoms) are higher in the AMB-group compared to the WTL-group warrants notice as the transition of depressive symptoms into a depressive syndrome may increase the probability of suicidal ideation or attempt (De Leo et al., 2005). That suicide attempters often refer to a suicide attempt as a way to escape from the current life (McAuliffe et al., 2007) reflects the salience of life and death, even at the extreme ends of the suicidal spectrum. Despite the high variability of the AMB-group on both functions, the higher average level of social support in this group might indicate that the wish to die is partly contained by the wish to live through the perception of social support. Although speculative, it may be that the AMB group is less stable over time and that their wish to die evolves unpredictably, with the perception of stable social support functioning as an important determinant of this transition.

This study is subject to a number of limitations. First, participants were able-bodied, which sets them apart from the subgroup of frail older adults who are often exposed to somatic multimorbidity. Second, the wish to live or the wish to die was assessed as a point in time, whereas it is plausible that a wish to live and a wish to die have a dynamic character and can evolve over time.

This study has several clinical implications. First, the ordinal nature of the three groups typology is not reflected in the level of social support, suggesting that (the lack of) social support possibly functions as a modifiable factor in the suicidal process, which was of particular relevance for the AMB group. Second, the simultaneous presence of the wish to live and the wish to die in some older adults is indicative for an ambivalent attitude towards life and death. In assessing the wish to die in older adults, it is relevant to assess the remaining wish to live as well.

In conclusion, results of the present study indicated a simultaneous presence of a wish to live and a wish to die in older inpatients, and that the balance between these is determined by “Subjective Well-being” and “Social Support”. The groups WTL-AMB-WTD cannot be ordinally ranked, and this suggests that the onset of a wish to die is a complex psychological phenomenon that should be placed on a multidimensional continuum.

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CHAPTER 7

GENERAL DISCUSSION

“Il n'y a qu'un problème philosophique vraiment sérieux:
c'est le suicide.
Juger que la vie vaut ou ne vaut pas la peine d'être vécue,
c'est répondre à la question fondamentale de la philosophie.”

Albert Camus

7. GENERAL DISCUSSION

7.1 Study findings

The overall aim of this doctoral project was to deepen the understanding of the process and the onset of STB in older adults. We did this by exploring and incorporating different types of independent variables in the study, including psychiatric, psychological, and age-specific factors.

The **first research question** required *a review of the available research data on STB in later life*. We critically reviewed the literature studies published between 2000 and 2009 and summarized the findings in a comprehensive review report. We added a concise update of the important research lines in recent literature on STB in older adults in an addendum (chapter 2). Based on the formulated research gaps in the review, we were able to set up the research design of the quantitative and qualitative studies of the project.

The qualitative study that investigated the **second research question** "*how do suicidal elderly experience their suicidality and which contributing factors can be identified to the onset of STB in later life*" focused on how older persons who attempted suicide experienced the suicidal process and which idiosyncratic factors contributed significantly to the mental process towards the attempt. The study revealed that when older suicide attempters were confronted with a loss (e.g. loss of a spouse or loss of health), they perceived this loss as a complete disruption of their former life. Moreover, they experienced loneliness and their state of mind was characterized by a feeling of total loss of control. The concurrence of these cognitions, feelings and physical sensations evoked the feeling of an "unwillingness to continue living the current life any longer" and the cognition that "the current life needs to come to an end", eventually resulting in a suicide attempt.

As described in chapter 4 and chapter 5, the **third research question** "*Which psychological variables, related to the process of ageing, can be identified in the prediction of the wish to die in older adults"* led to the construction of univariate and multivariate regression models predicting a wish to die in older adults, which included psychological variables (related to the process of ageing) and known risk factors predicting STB. We found that both life attitudes

and death attitudes were associated with a wish to die. First, the predicted probability of the wish to die increases when levels of purpose in life, coherence and life control (as subdimensions of life attitudes) decrease and when levels of existential vacuum increase. Purpose in life and the Purpose in Life*Gender interaction explained an additional 19% of variance in the prediction of the wish to die in older adults, besides sociodemographic (age and gender) and clinical factors (depressive disorder and somatic symptoms). Second, by adding death attitudes and religion in a hierarchical regression model, over and above common predictors such as a depressive disorder or somatic symptoms, 55% of the pseudovariance of the wish to die was explained and an effect size of 0.89 was reached. The death attitudes Escape Acceptance and Fear of Death in particular predicted a wish to die. The lack of a unique contribution of religiousness might be due to an overlap between the different dimensions of religiousness and death attitudes. Results of this study indicate that *how* death is perceived partly determines whether an older person develops a wish to die.

As reported in chapter 6, the **fourth research question** "*Should different manifestations of STB be considered as distinctive categories"* was operationalized in a quantitative study in order to assess whether the wish to live versus the wish to die in older adults should be considered as overlapping or as distinct phenomena. A three groups typology based on the ratio of the wish to live versus the wish to die (only having a wish to live (WTL), only having a wish to die (WTD) or having both a wish to live and a wish to die (ambivalent group - AMB)) was found to be applicable to older patients hospitalized for psychiatric and/or somatic symptoms. We were able to predict the assignment into these three distinct groups with good accuracy (66%). The ordinal relation of the three groups typology was reflected in the differences in predictive variables, such as depressive symptoms, life satisfaction, and support of a significant other, which are presumed to be associated with the onset of STB in later life. Variables such as social support from family and friends had discriminatory power in the assignment to the groups WTL versus AMB, suggesting the protective function of these variables in preventing older people from sliding down to a stage characterized by an exclusive wish to die.

7.2 Study limitations

The results of the studies in this dissertation need to be interpreted against the background of the following limitations.

A first limitation was the exploratory character of the study, given the uncharted research territory on psychological age-specific factors related to the onset of a wish to die. This implies that findings are partly data-driven and that hypothesis-testing studies are needed in a next phase to replicate findings in similar samples.

Second, due to the limited quality of part of the interview data in the qualitative study, the initial partial objective of the study (i.e. to study the process of the onset of a wish to die and/or suicide ideation in depressed older adults in a profound way) was not achieved. Considering that theoretical frameworks are needed to explain the suicidal process in later life (see below), qualitative idiosyncratic data on this subject would have helped develop a theory grounded in these data. The importance of the selection procedure, specifically in older adults, is a lesson to be drawn for future research.

Third, respondents of the study sample might not be representative for the older population in general. By studying a homogeneous sample of older adults (able-bodied, inpatients, relatively large proportion of young-older adults), we attempted to control for the effect of these variables on the dependent variables. This might imply that the results are not generalizable to frail, home-dwelling and/or very old adults. We hypothesize that, if we included frail older inpatients in the study as well, a wish to die would be more frequently reported, since these older adults are not only more frail, but also are likely to have experienced more losses compared to younger, able-bodied persons. Previous studies tended to reveal differences in correlates of a wish to die or STB in very old persons. For example, a recent population-based study on persons who reached extreme old age and who were relatively intact from a cognitive perspective, revealed that of those who reported feelings related to a wish to die, only a minority fulfilled the criteria for minor or major depression (Fassberg et al., 2013). Neither poor perceived health nor disability was found to be associated with suicidal feelings. It is possible that perceptions of health and quality of life shift for very old people, which would render health factors less important in the onset of STB in very old age (Winkel and Zhang, 2005).

A fourth factor that might hamper the interpretability of the results is the relatively small sample size, impacting the study power of the quantitative approach. Although the response rate was 68.90%, which is an improvement over studies surveying STB in older adults in the

general population (Kammerer et al., 2005, Hillerns et al., 2005), the number of patients who had a sole WTD was limited and therefore they were underrepresented in the sample. Because of the limited variance in different manifestations of STB (wish to die, suicide ideation, suicide plan, suicide attempt) in our sample, we were not able to contrast these in associated risk factors, as outlined in the provisional doctoral plan. Due to a lack of statistical power, we were forced to limit the comparison of correlates to the WTL-, AMB-, and WTD- groups.

A last limitation pertains to the cross-sectional, retrospective nature of the quantitative study, implying that conclusions regarding causality cannot be drawn. The observed associations between independent and dependent variables may be bidirectional and the question of temporality of effects cannot be fully answered. Moreover, the cross-sectional character of the study implied a point-in-time assessment of the wish to live and the wish to die, whereas it is plausible that a wish to live and a wish to die as well as feelings related to these are dynamic in character and that they evolve over time. Previous research has indicated that persons with recent death ideation (with depressive symptoms) had past histories of suicide ideation and that the worst point severity of suicide ideation had been found to be a stronger predictor of suicide than the most recent assessment (Van Orden et al., 2013).

7.3 Scientific and clinical contributions of the doctoral project

The importance of this explorative research resides in its contribution to a deeper understanding of the onset and process of STB in older adults. Due to the mixed methods research design, we were able to investigate the suicidal process in older adults from multiple perspectives allowing to respect the complexity of this process. There are two major findings which stand out, as described in the following paragraphs.

First, our data clearly indicate that STB are multidetermined and that they involve different contributing (interacting) factors such as distal (e.g. gender) versus proximal (e.g. somatic symptoms) factors, and risk (e.g. depression) versus protective (e.g. social support) factors. The multifactorial determination of STB is an empirically sound finding, but this thesis adds and stresses the idiosyncratic interplay between contributing factors resulting in STB. How life and death are perceived, to what extent the occurrence of a life event is appraised as a disrupting experience, and the level of satisfaction with one’s life are all relevant questions in understanding the onset of a wish to die. This means that the subjective judgment on the

quality of the current life versus of the past life, functions as a contributing factor to the wish to die, adjacent to the risk and protective factors relevant for the onset of STB.

Second, the findings regarding the complex relationship between contributing (risk) factors to the onset of STB on the one hand and the non-linear relationship between the wish to live and the wish to die in later life on the other hand, stress the necessity to situate STB and its contributing factors in a multidimensional space. Ambivalence is a key term in the interplay of contributing factors as well in the wish to die. Ambivalent feelings and cognitions about one's life and death seem to co-exist side by side.

In the following paragraphs we elaborate these findings in more detail.

7.3.1 Scientific contributions

The first important scientific contribution is the theory on the pathway to a suicide attempt, based on older adults' experiences reported shortly after the attempt. An important element in the theory is the experience of loss of control (due to sleep deprivation, anxiety symptoms, lack of lucidity) in the buildup before the suicide attempt. This contradicts intuitively held, age-biased beliefs that suicide ideation or a suicidal act in later life should be considered as rational and normal. The assumption that STB in later life is more rational than in younger life is for example reflected in the study from Uncapher and colleagues (Uncapher and Arean, 2000) where a primary care physician received a vignette of a geriatric, retired patient who was depressed and suicidal and an identical vignette of a younger, employed patient. Depression and suicidal risk in both the adult and the geriatric vignette were recognized, but less willingness was reported to treat the older suicidal patient compared to the younger patient. Suicide ideation on the part of the older patient was considered as understandable, and therefore more rational and normal. Notwithstanding the empirically shown impact of depression and loss of control on the suicidal process, the willingness to use therapeutic strategies in older suicidal patients seems to be affected by pervasive, negative societal discourses regarding older adults and the process of ageing. The awareness that this so-called ageism might overrate the presence of self-determination during the suicidal process in older persons is therefore important.

A second important contribution to the field of STB in later life is the identification of psychological age-specific variables such as death attitudes, life attitudes and life satisfaction

and their significant contribution to the prediction of a wish to die in older adults. First, a relevant result of both the quantitative and qualitative studies is the identification of variables stressing the appraisal of one's life situation (such as the balance of life, purpose in life, a sense of coherence, the disruptive character of a life event, etc.) as risk factors for the wish to die. How life events and one's life situation were perceived and how they impacted daily life were as important as the presence of objective risk factors. This is congruent with a notable trend in research literature to stress the subjective experience and appraisal of situations rather than the objective registration of the presence of a (risk) factor in a person's life. Variables reflecting the subjectively experienced degree of social connectedness for example yielded more consistent associations with STB than 'objective' measures of living conditions or marital status (Fassberg et al., 2012, Purcell et al., 2012). The significance of the appraisal and value of a situation in the onset of STB might explain why it remains difficult to predict whether an older person at risk (exposed to known risk factors of STB) will effectively become suicidal or whether that person will execute a suicidal act. Second, how death was perceived turned out to be a significant predictor of a wish to die, besides the factors involving the life situation of the older person. The contribution of different death attitudes (such as fear of death) in the prediction of a wish to die in older adults is implicit evidence for the Interpersonal Theory of Suicide (Van Orden et al., 2010): a wish for death will transform into active thoughts of killing oneself only within individuals capable of suicide through the loss of fear associated with death and suicidal behaviour.

Third, this study clearly challenges the validity of the traditional continuum model of suicide, which starts with suicide ideation, is followed by making a suicide plan and ends with a suicide attempt (Kessler et al., 1999). Given that a wish to die has been found to be a marker for lifetime suicide attempts (Baca-Garcia et al., 2011), for completed suicides (Suokas et al., 2001) as well as for suicide ideation, identifying suicide ideation as the onset point of the pathway to a suicide attempt can be questioned. Our study also suggests that the onset of STB is not exclusively captured by the manifestation of suicide ideation. First, our study indicated that the risk factors for suicide ideation, suicide attempt and suicide in later life were relevant in the prediction of a wish to die as well. Second, both the qualitative study as the quantitative study indicated the complex interplay of factors in the mental process in older adults regarding a wish to live and/or a wish to die. The grounded theory as proposed in the qualitative study stressed the complex interaction between the different (risk) factors in the pathway towards a suicide attempt. The burden and the psychological distress of some life

conditions seemed to intensify the inability to live the current life any longer, resulting in a wish to die. The results of the quantitative study showed a simultaneous presence of a wish to live and a wish to die in older inpatients, indicating the particular relevance in this discussion of the balance between them. Thus, the interplay between a wish to live, a wish to die and/or suicide ideation with life conditions (such as protective factors, burden of life conditions, existential consideration of the lived life and the life remaining to live,…) should be considered in the development of STB in later life as opposed to limiting the focus to the mere presence of suicide ideation.

Fourth, our studies challenge the traditional cascade model of risk for suicide attempt/suicide, including the severity gradient from low (wish to die) to high (suicide attempt) (e.g. (Yip et al., 2003)). In our study, the ordinal nature of a WTL>AMB>WTD typology was reflected in the differences in predictive variables of STB (depressive symptoms, somatic symptoms, life satisfaction, support of a significant other) which are presumed to play a role in the onset of STB in later life. Nevertheless, this ordinal rank of WTL>AMB>WTD was not reflected in the levels of social support received from family and/or friends. This finding raises the question whether different manifestations of STB can be situated on a linear continuum of severity. We found that the interaction of risk and protective factors is crucial in the suicidal process and that it influences the probability of transitioning from one stage of suicidality to another, without assuming that this is a linear process. The observed interaction in our study between Purpose in life and Gender in the prediction of the wish to die is a good example that fits this hypothesis. The onset of a wish to die is a complex psychological phenomenon that should be placed on a multidimensional continuum and which seems to be more complex than the initial models stated. The recognition of the complexity of the suicidal process has been recognized in recent literature. Studies focusing on suicide risk assessment for example indicated that suicidal symptoms can be disentangled into two factors labelled as “plans and preparation” and “suicidal desire and ideation” (Joiner et al., 1997).

Fifth, the inverse association between a wish to die and life attitudes such as Purpose in Life, Life Control, and Coherence emphasizes the importance of integrating variables originated in theories of healthy ageing, mental health and positive psychology in etiological models of STB in later life. Two approaches in literature support this point of view. First, the positive psychology movement focuses on the positive meaning-making process in order to adapt to experiences of loss. This process seems crucial in the difference between successful ageing

and experiencing life as a burden: a constructive way to cope with losses, resulting in maintaining a purpose in life, keeping a feeling of control over one's life and having a minimum feeling of coherence in life, might buffer the experience of negative emotions on one's life. This might explain why a large amount of older people are doing well psychologically, despite the increased likelihood by ageing to lose significant others, one's health, the ability to function like one was used to, etc. Well-being even improves with age (Carstensen et al., 2011), age is associated with a higher level of positive affect (Scheibe and Carstensen, 2010), and rates of depressive disorders and other forms of mental illness decrease with age (Fiske et al., 2009). Second, recent studies have focused on factors promoting psychological resilience and preventing the onset or exacerbation of STB (Heisel et al., 2015b). The shift in research literature to incorporate 'positive' variables is in contrast with the initial theoretical models focusing on the role of negative emotions and cognitions in the onset of STB. Hopelessness (Beck, 1963) and severity of depression (e.g. (Isometsa, 2014)) were initially considered to be key elements in the onset of STB. Gradually, positive and adaptive beliefs, such as reasons for living (Linehan et al., 1983), were incorporated in etiological models of STB as well. Most recently, alongside the role of an excessive level of negative affect, the lack of positive affect is emphasized in the onset of depression and STB (Hirsch et al., 2007, Diehl et al., 2011). The importance of experiencing levels of positive affect (not in opposition to low levels of negative affect, but defined as optimism, self-confidence, meaning in life, satisfaction with life, etc.) is theoretically demonstrated in studies finding an inverse association with depression and suicide ideation (Hirsch et al., 2007). The impact of experiencing low levels of positive affect has been expressed in clinical practice by depressed patients themselves: their expectation of restoration of a positive mood is crucial for them when it comes to defining remission of depression (Demyttenaere et al., 2015).

7.3.2 Clinical contributions

7.3.2.1 Reaching out beyond common risk factors in assessing risk of STB

Existing studies have identified a constellation of risk factors associated with an increased risk for suicide in later life such as mental disorders, social isolation and somatic disorders. However, recent studies have put forward the importance of moving beyond these known risk factors to evaluate a suicide risk in a person (Stanley et al., 2015). Results of our studies stress the importance to assess STB in a broader way as well. The in-depth interviews with suicide attempters confirmed that the perceived impact of loss on their life contributed more to the onset of STB than the loss as such. The fact that life attitudes are highly correlated with the

existence of a wish to die suggests that it is relevant to not only enquire about recent life events, but to understand *how* this life event was perceived and *how* it impacted daily life as well. These results emphasize the importance to assess not only the presence of suicide ideation or the presence of a known risk factor but also the meaning and the existential impact of that experience on daily life (van Wijngaarden et al., 2014). By means of a dialogue with the suicidal older person on how the loss is appraised, the clinician may receive an indication to what extent the patient is willing to continue the present life, to what extent death is perceived as an escape option of the current life situation and whether self-determination is present in this ongoing mental process. In the context of this latter aspect, healthcare professionals should pay particular attention to sleep deprivation (insomnia), feelings of anxiety and exhaustion as these might result in a feeling of loss of control which might hamper the ability of self-determination in the mental process with regard to the ambivalent presence of the wish to live and the wish to die. An open dialogue with the older person is therefore necessary in the evaluation process of the presence of suicidal risk, besides a registration of the presence of a wish to die, suicide ideation and potential risk factors.

Second, we also observed the simultaneous presence of a wish to live and a wish to die in a significant number of older patients, indicating the salience and relevance of life *and* death for older adults. Our studies reveal that it is more appropriate to translate a wish to die in older persons to a wish to not live *this* life, in its current conditions, any longer. Word count analysis of the interview data with suicide attempters for instance revealed that the words “life” and “live” were much more frequently used than the words “death” and “die”. The presence of a wish to die is not a desire to be dead, but a desire to end one’s current life. The assessment of STB nowadays risks to focus too narrowly on the wish to be dead, while enquiring after the appraisal of the current life as well is equally or even more important.

Older adults with mood disorders and/or STB tend to have contacts with primary care providers rather than with mental health providers. Given that this population at risk is frequently seen in primary care settings (three of four older adults who died due to suicide had contact within the year preceding the suicide; 45% within 1 month prior to the suicide (Luoma et al., 2002), which is more compared to young adults), primary care is an important venue to implement suicide preventive interventions. Primary care professionals could therefore have the potential power to contribute to the prevention of STB in older adults, if the right questions to assess risk for suicide are asked: querying patients on their desire for death has

the same value as assessing suicide ideation in order to examine the risk for suicide attempts (Baca-Garcia et al., 2011). General practitioners might be well placed as gatekeepers for STB in older adults, but the time and ability required to understand the older person's life situation in a holistic way and to discuss existential issues, as mentioned above, should be taken into account (Herraeza et al., 2005).

7.3.2.2 Modifiable age-specific psychological variables

The finding of an inverse association between meaning in life and a wish to die is important, because meaning in life is a potential time-varying risk factor, which is contrasted to time-invariant risk factors (such as gender or a history of a suicide attempt) of STB. Meaning in life therefore can be considered as an important theme in the psychotherapeutic work with older (depressed) adults: it opens perspectives in terms of treatment and prevention of STB as it is as a modifiable risk factor for a wish to die in therapy. The importance of meaning in life for mental health in general has been previously demonstrated: on the one hand lower meaning in life is associated with lower levels of well-being (Steger et al., 2009) and (increased likelihood of) depression in particular (Volkert et al., 2013). On the other hand, high levels of meaning in life, purpose in life, life satisfaction and other life attitudes are correlated with subjective wellbeing in later life (Baltes and Carstensen, 1996). There is empirical evidence that meaning in life increases during the course of psychotherapeutic treatment in adult inpatients with a spectrum of mental disorders, even when psychotherapy is not focused specifically on meaning (Volkert et al., 2013).

7.3.3 Implications for prevention of STB

Seeing the target sample of this doctoral study was a group of inpatients with somatic and/or psychiatric symptoms, results of the studies offer some elements in the setup for preventive interventions for older adults at risk for STB, in selective and indicated levels of prevention.

First, the identification of modifiable factors of STB represents a therapeutic target for suicide prevention in late life: interventions on these factors might enhance the perceived quality of life among older persons at heightened risk for suicide. For example, since poor subjective sleep quality was found to be a short term risk factor (which increased risk for suicide within a relatively acute time frame), targeting disturbed sleep and the associated feeling of physical exhaustion might be an important opportunity for suicide prevention (Bernert et al., 2014). In a broader way, interventions mitigating physical problems such as pain, visual and hearing

impairment, and physical discomforts can make life more bearable for older adults (Rurup et al., 2005). Furthermore, the found association between lower levels of meaning in life and a wish to die encourages the clinician to support the quest for meaning in older persons at risk. Meaning in life might generate resilience to a wish to die and suicide ideation in later life (Heisel et al., 2015a).

Second, the specificity of risk factors for STB may be less important than their cumulative burden on a person (Sveticic and De Leo, 2012), which implies the need for a person-centered approach in the estimation of suicide risk in older adults. On the one hand, entering into dialogue with the older person creates the opportunity to assess STB profoundly. Recent studies indicate that apart from the assessment of the acute manifestation of STB, it is important to enquire about the worst point suicidal experience in recent times, since passive suicide ideation is frequently associated with active suicide ideation in older adults (Van Orden et al., 2014). On the other hand in the case of a 'patient-centered' approach, a clinician might help the older person to maintain or enhance their quality of life or their reasons for living by exploring the meaning of the burden of present risk factors on that person.

7.4 Future research perspectives

A first important challenge for the field of late life suicide research is a further development of theoretical frameworks to explain STB in later life. The body of research to date is focused on the identification of risk factors of STB, while theory-driven research is limited and only partial steps have been taking to empirically test hypotheses deduced from these theories. The interpersonal theory of suicide (Van Orden et al., 2010) and the lifespan developmental theory applied on STB in later life (Fiske and O'Riley, 2015) are examples of recent research lines using a theory-driven approach. We refer to the second chapter for more details on these theories. Future research needs to answer the open question whether theories should be developed specific to STB in later life or whether theories on STB in adult life should be adapted by incorporating older age-specific factors (Van Orden and Conwell, 2015).

A second venue for future research is to determine the predictive power of the risk factors of STB in later life for specific populations. Suicide remains difficult albeit impossible to predict, and despite the close association between depression and suicide in late life, the predictive value of depression remains low (Conwell, 2014). Not all older adults who die by

suicide were depressed. Moreover, risk factors do not always have the same impact across different population groups (inpatients versus home-dwelling older adults for example). It is therefore important to examine the predictive power for suicide of the found risk factors in our study, i.e. life attitudes and death attitudes, and to explore how the interplay of the wish to live and the wish to die determines the actual risk for suicide. Notwithstanding the need to identify the sensitivity and specificity of risk factors and their clinical utility in high-risk groups, studies indicate that generating models with sufficiently high sensitivity and specificity to predict suicide remains extremely difficult (Hung et al., 2015), even in high risk groups such as psychiatric inpatients (e.g. (Powell et al., 2000). Given the rarity of suicide, it will always remain a challenging, maybe impossible assignment to predict a large percentage of suicides in later life (Sher, 2011). Future research studies should focus on factors predicting the early transition from a wish to die and/or suicide ideation to a suicide (attempt), assuming that in that stage of the suicidal process there is still time to intervene (Nock et al., 2009). It will therefore be necessary to determine the actual suicide risk of older patients across the spectrum ranging from a wish to live to a wish to die. For example, previous research on the difference between clinical ratings of the wish to die and the wish to live in adult psychiatric outpatients indicated that when the orientation towards living predominates, the risk to attempt suicide decreases, while the presence of a wish to die combined with the absence of a wish to live, was an indication of a higher risk for suicide (Brown et al., 2005). A replication of this finding to a sample of older persons would be relevant.

A third important topic for further study is the interaction between gender and correlates of STB in later life. There is a robust finding of the main effect of gender on suicide rates in later life, on rates of suicide attempts and suicide ideation, and specific correlates are found to be relevant for older women, but not for men. Cerebrovascular diseases for example were found to be associated with a higher risk for a suicide attempt in older women only (Chan et al., 2014) and female gender was found to moderate the relationship between marital status and a sense of belonging in the prediction of suicide ideation in older adults (McLaren et al., 2015). Effects of community based prevention programs show a sex difference as they appear to only be effective among older female people (Lapierre et al., 2015, Conwell, 2009). Future research should investigate the interaction effects of different correlates of STB with gender.

Fourth, there is a need for research designs focusing on (correlates of) STB in different age groups of the aged 65 years and over. There is for instance growing evidence that correlates of

STB in the oldest group of older people differ from those in the youngest group of older people with regard to female gender (Cattell, 2000), previous psychiatric hospitalization (Erlangsen et al., 2005), and widowhood (Erlangsen et al., 2004). The examination of the suicidal process and STB in the oldest group of older persons will be important, seeing the demographical evolution of this group as a rapidly growing cohort.

Fifth, an open question remains whether a wish to die should be considered as a 'normative' response to the challenges inherent to later life or whether a wish to die should be considered as an indicator for elevated suicide risk. Some authors and clinicians opine that a wish to die in old age is a 'normal', understandable phenomenon, to cope with the stress of ageing and with age-group typical negative life events (Battin, 1999, Moore, 1993). Recent research however seems to support the hypothesis that a wish to die in older adults is to be interpreted as a passive suicidal ideation (Raue et al., 2010) and that it needs to be conceptualized as a marker of severe psychopathological distress (Linden and Barnow, 1997, Barnow et al., 2004, Van Orden et al., 2013). The wish to die is interpreted in terms of psychopathology and psychiatric morbidity. However, the status of the wish to die in the experience of an older person is probably not clear-cut: there probably are older adults who endorse a wish to die, but who are not at risk for suicide. This latter, small group seems to be characterized by an older age, confronted with functional limitations but endorsing limited depressive symptoms. The association between depressive symptoms and the wish to die might not solely be explained as a result of a clinical depression (van Wijngaarden et al., 2014), but also as a result of a mourning process related to the experiences of multiple losses which are inherent to the existential character of late life. A challenge for future research is to determine when a wish to die is associated with an elevated suicide risk and therefore when intervention is needed (Van Orden and Conwell, 2015). The clarification of the relation between self-determination on the one hand and the presence of a mental disorders and/or the experience of loss of control on the other hand seems necessary to deepen the understanding of the character of a wish to die in later life.

Finally, a wish to die in older adults may be expressed in several ways and its meaning may be multilayered. A wish to die for some older persons might be synonymous with a passively waiting for death to occur naturally over time. In other cases however, a wish to die leads to a life-ending act such as suicide, a request for assisted suicide or euthanasia. A wish to die functions as a common component in the pathways to the end-of-life decisions in scenarios of

suicide, requests for assisted suicide or euthanasia. Assisted suicide and euthanasia have legal frameworks in several countries: in Belgium euthanasia is legalized under strict conditions. Besides the differences in their legal status, or in the ethical views held by society on them, research literature on the similarities and differences with regards to the pathways to act on the wish to die is in its infancy, demonstrated by the scarce research reporting on both suicide, assisted suicide and euthanasia (e.g. (Guirimand et al., 2014)). Therefore the extent of self-determination and mental capacity in the several decision making processes in ending one's life needs to be clarified. Future research will also need to explore whether the self-centered, introspective position of the suicidal older person is recognized in the processes related to assisted suicide and euthanasia as well. Finally, the relationships between thoughts, feelings, and cognitions related to suicide, assisted suicide, and euthanasia as life-ending options need to be understood better: are the decision making processes and dynamics underlying these behaviours characterized by overlapping, similar or distinct dynamics for example?

7.5 General Conclusion

The suicidal process and STB in later life are complex and multidetermined. The overarching goal of this thesis was to add to a deeper understanding of the suicidal process and STB in later life. We were able to identify psychological age-specific correlates of STB in later life (life attitudes, death attitudes, life satisfaction, loss as a disruptive experience, etc.) and we determined that *how* a life situation and event was appraised by the older person is highly important. The studies indicated a complex, non-linear relationship between the wish to live and the wish to die, indicating that STB and its contributing factors should be situated in a multidimensional space.

7.6 References

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ABSTRACT OF THE RESEARCH

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Suicide in later life is an important health problem because of the high rates of late life suicide in industrialized countries. Suicide rates are at least as high in older age groups as in younger groups; men over 75 years old are particularly vulnerable. Research on suicidal thoughts and behaviours (STB) focused on older adults is significantly less exhaustive than research on STB in other age groups and the lines of research are limited. In the last decade, several studies focused on the onset of STB specifically in later life and a number of independent risk factors has been identified for STB in later life in general: female gender, mental disorders (with affective disorder as the most robust predictor), the presence of a physical illness, social disconnectedness, functional impairment, pain, and bereavement. However, few research studies included psychological age-specific correlates (such as death attitudes, life attitudes, life satisfaction etc.).

The overall aim of this doctoral project was to deepen the understanding of the onset of and the process to STB in older adults (chapter 1). We did so by exploring and incorporating different types of independent variables in the study, including psychiatric, psychological, social, and age-specific factors. A mixed methods research design was used to address this overall aim. More specifically, this project aimed:

(1) To provide a review of research literature on STB in later life.

(2) To explore, by means of a pilot-study with a qualitative research design, how suicidal patients experience their STB and to identify the idiosyncratic contributing factors to the onset of STB in later life.

(3) To construct univariate and multivariate regression models predicting a wish to die in older patients, with inclusion of psychological variables (related to the process of ageing) (quantitative study).

(4) To investigate whether different manifestations of STB (dependent variable) should be considered as distinctive categories (quantitative study).

A mixed methods research design was used to meet this overall aim.

First, we critically reviewed the literature studies published between 2000 and 2009 and summarized the findings in a comprehensive review report (research question 1 - chapter 2).

In a qualitative study we explored the reflections of older adults on the process preceding their suicide attempt (research question 2 - chapter 3). Data were gathered using in-depth interviews with eight older inpatients who had attempted suicide. The grounded theory method was used for data analysis. The inpatients described their life and self as being disrupted after experiencing a loss, resulting in loneliness, loss of control, and unwillingness to continue living the current life any longer. The findings indicate that the concurrence of these constructs precedes a suicide attempt in later life.

In the first part of the quantitative study (research questions 3 and 4), we explored the contribution of life attitudes, death attitudes and religiousness to the presence of a wish to die in older inpatients (chapter 4-5). The sample comprised 113 older inpatients (from a psychiatric and somatic ward) with a mean age of 74 years. Psychiatric diagnoses were assessed by the SCID-I.

Logistic regression analyses indicated a statistically significant relationships between life attitudes and the wish to die (chapter 4). Purpose in life and the Purpose in Life*Gender interaction in particular explained significant additional variance in the prediction of the wish to die, over and above common predictors such as a depressive disorder and somatic symptoms. Purposelessness in life can therefore be considered as an important correlate of a wish to die, especially in older men, independently from sociodemographic and clinical features.

Both religiousness and death attitudes were associated with a wish to die in univariate models (chapter 5). After adding these variables in a multivariate logistic hierarchical model, death attitudes remained significant predictors but religiousness did not; 55% of the pseudovariance of the wish to die was explained by these variables, with an effect size of 0.89. Major depressive episode, somatic symptoms, Fear of Death, and Escape Acceptance were the most important predictors of the wish to die.

Our study suggests that in assessing a wish to die in older adults, life and death attitudes assessments need to be taken into account, besides the presence of a depressive disorder and/or somatic health problems. Discussing with older inpatients how they perceive and appraise life and death brings clinical patient-oriented benefits as these factors can play a role

in the early detection (and therefore possible prevention) of suicide, suicide ideation and associated behaviours in older adults.

In the second part of the quantitative study, we investigated whether a three groups typology - "wish to live (WTL)", "ambivalent (AMB)" and "wish to die (WTD)"- is determined by common correlates of STB in later life and whether these groups can be ordinally ranked based on these correlates (chapter 6). Discriminant analysis was used to create two functions (combining social, psychiatric, psychological, and somatic variables) to predict the assignment of older inpatients into these groups. The functions "Subjective Well-being" and "Social Support" allowed us to assign patients into these three distinct groups with good accuracy (66.1%). "Subjective Well-being" contrasted the groups WTD and WTL and "Social Support" discriminated between the groups WTD and AMB. "Social Support" was highest in the AMB-group. Our study indicated that a wish to live and a wish to die can exist simultaneously in older inpatients, and also that the balance between them is determined by "Subjective Well-being" and "Social Support". The AMB group showed the highest scores on "Social Support", suggesting that the groups WTL-AMB-WTD cannot not been situated on a one-dimensional continuum.

We concluded the dissertation with a general discussion (chapter 7), covering the main findings of this study as well as implications, limitations, and suggestions for future research and clinical practice.

The overarching goal of this PhD-project was to add to a deeper understanding of the suicidal process and the onset of STB in later life. We were able to identify psychological age-specific correlates of STB in later life (life attitudes, death attitudes, loss as a disruptive experience, etc.) and also determined that *how* a life situation was appraised by the older person is highly important. Moreover, the studies of this thesis indicated a complex, non-linear relationship between the wish to live and the wish to die, indicating that STB and its contributing factors should be situated in a multidimensional space.

POPULAR SUMMARY

POPULAR SUMMARY

Suicide in later life is an important health problem because of the high rates of late life suicide in industrialized countries. Suicide rates are at least as high in older age groups as in younger groups; men over 75 years old are particularly vulnerable. Research on suicidal thoughts and behaviours (STB) focused on later life is significantly less exhaustive than research on STB in other age groups and the lines of research are limited. In the last decade, several studies have investigated the onset of STB in later life and a number of risk factors has been identified for STB in later life in general: female gender, mental disorders (with affective disorder as the most robust predictor), the presence of a physical illness, social disconnectedness. However, few research studies have used a theory driven approach where psychological age-specific correlates have been included.

Following this, the overall aim of this doctoral project was to deepen the understanding of the process and the onset of STB. Age-specific correlates and different types of potential factors, including psychiatric, psychological and social factors, were explored and incorporated in models predicting STB in later life. A mixed methods research design was used to address this overall aim.

Research literature on STB in later life is introduced in the **first chapter** and reviewed comprehensively in the **second chapter**. First, a number of risk factors has been identified for STB in later life as mentioned above. Second, protective factors have been explored as well, identifying specific reasons for living and particular attitudes towards suicide. Social connectedness, and religion have a protective function in the onset of STB in later life. Third, psychological factors have been included in the last years to try to explain the onset of STB in old age. Research indicates that personality traits can be linked to different manifestations of STB. Fourth, neuropsychological impairment is associated with STB in later life, as demonstrated by poorer performance on cognitive tasks measuring executive functioning.

In **chapter 3**, we describe the first study of this doctoral project. A qualitative study with older suicide attempters was conducted to explore idiosyncratic factors contributing to the suicidal process preceding a suicide attempt. A theory was formed, grounded in data provided by in-depth interviews. When confronted with a loss, older suicide attempters perceived this loss as a complete disruption of their former life. In addition, they experienced loneliness and

their state of mind was characterized by total loss of control. The concurrence of these cognitions, feelings and physical sensations evoked the feeling of “unwillingness to continue living the current life any longer” and the cognition that “the current life needs to come to an end”, eventually resulting in a suicide attempt. These results indicate a direction for therapeutic interventions aiming to prevent suicide in depressed older adults: it is important to discuss with the older adult the experience and meaning of a known risk factor and life events in order to understand the impact of these factors on one’s life in assessing potential suicide risk. Furthermore, health professionals should pay particular attention to physical complaints, sleep deprivation, feelings of anxiety, and exhaustion, since they can lead to the feeling of subjective loss of control, a key element in the pathway to a suicide attempt.

In the **fourth chapter**, the second study of the doctoral project, based on a quantitative research design, is presented. In the first part of the study, the aim was to explore whether life attitudes are associated with a wish to die in older male and female inpatients. We found that life attitudes were related to the presence of a wish to die. Specifically for older men, purposelessness in life was found to be a risk factor for the presence of a wish to die, besides sociodemographic and clinical features.

The aim of the study in the **fifth chapter** (second part of the quantitative study) was to explore the relationship between religiousness and death attitudes on the one hand and a wish to die in later life on the other hand. Fear of death was found to be negatively associated with a wish to die. The perception of death as a way to escape from life (Escape Acceptance) was found to be important as well. Seeing there is overlap between death attitudes and religiousness, the latter did not have a unique impact on the presence of a wish to die. This study suggests that *how* death is perceived by older adults partly determines whether they have a wish to die.

In the **sixth chapter** we investigated whether a three groups typology, wish to live – ambivalent – wish to die (WTL-AMB-WTD), is applicable to older adults and whether the balance between the wish to live and the wish to die is determined by a combination of psychiatric, psychological, somatic, or social factors (third part of the quantitative study). Based on these factors, we were able to assign older adults into these three groups with good accuracy. The factor “Subjective Well-Being” contrasted the groups WTD and WTL and the factor “Social Support” discriminated between the groups WTD and AMB. Our results

suggested a simultaneous presence of a wish to live and a wish to die in older inpatients, and also that the balance between them is determined by the factors “Subjective Well-Being” and “Social Support”. The AMB group showed the highest scores on “Social Support”. This suggests that the groups WTL-AMB-WTD cannot not been situated on a one-dimensional continuum.

We concluded this dissertation with a general discussion in **chapter 7**, covering the main findings of this study as well as implications, limitations, and suggestions for future research and clinical practice.

In conclusion, the suicidal process and onset of STB in later life are complex and multidetermined. The overarching goal of this thesis-project was to add to a deeper understanding of the process and onset of STB in later life. We were able to identify psychological age-specific correlates of STB in later life (life attitudes, death attitudes, life satisfaction, loss as a disruptive experience etc.) and we determined that *how* life situations and events were appraised by the older person is highly important. Our studies indicated a complex, non-linear relationship between the wish to live and the wish to die.

SAMENVATTING

SAMENVATTING

Suïcide op oudere leeftijd is een belangrijk gezondheidsprobleem in de geïndustrialiseerde landen: De prevalentiecijfers van suïcide op oudere leeftijd zijn even hoog als op (jong)volwassen leeftijd en pieken bovendien systematisch bij mannen ouder dan 75 jaar. De laatste twee decennia is er in de wetenschappelijke literatuur dan ook veel aandacht besteed aan suïcidaliteit op oudere leeftijd en dit in al zijn aspecten: zowel het voorkomen als de risicofactoren van verschillende manifestaties van het suïcidaal spectrum zijn onderzocht en beschreven. Vrouwelijk geslacht, de aanwezigheid van mentale stoornissen (met depressie als meest robuuste risicofactor) en somatische ziekten, pijn, rouw, functionele beperkingen en het ervaren van beperkte sociale steun zijn de belangrijkste weerhouden correlaten. Theorievorming over het suïcidaal proces bij ouderen is echter opmerkelijk beperkter dan bij (jong)volwassenen. Bovendien zijn leeftijdsspecifieke correlaten maar beperkt opgenomen in onderzoek.

Het doel van dit doctoraatsonderzoek bestond dan ook uit het uitdiepen van de kennis over het suïcidaal proces op oudere leeftijd. Verschillende mogelijke leeftijdsspecifieke correlaten en verschillende types factoren, zoals psychiatrische, psychologische, sociale en somatische, werden geëxploreerd en opgenomen in modellen ter predictie van suïcidaliteit op oudere leeftijd. Een mixed-methods design (kwalitatieve en kwantitatieve studies) werd in het project toegepast.

Naast een algemene inleiding in het **eerste hoofdstuk**, geven we in het **tweede hoofdstuk** een integratief overzicht weer van de bestaande onderzoeksliteratuur met betrekking tot suïcidaliteit op oudere leeftijd. Ten eerste, zoals hierboven beschreven, werd een aantal correlaten van suïcidaliteit op oudere leeftijd geïdentificeerd. Ten tweede, factoren zoals religie, het ervaren van sociale steun, enzovoort, fungeerden als protectieve factoren bij het ontstaan van suïcidaliteit. Ten derde, psychologische factoren, zoals persoonlijkheidsfactoren, werden differentiërend bevonden in de verschillende manifestaties van suïcidaliteit. Tenslotte, neuropsychologische problemen, en meer bepaald executief disfunctioneren, bleken geassocieerd met suïcidaliteit op oudere leeftijd.

In **hoofdstuk 3** beschrijven we een kwalitatieve studie met oudere suïcidepogers waarin op zoek werd gegaan naar idiosyncratische factoren die een rol spelen tijdens het suïcidaal

proces. We ontwikkelden een theorie, gebaseerd op de data afkomstig uit diepte-interviews, over de factoren die een rol spelen in het tot stand komen van een suïcidale act. Een ervaring van een disruptief verlies, samen met een gevoel van eenzaamheid en subjectief controleverlies, leidden tot de ideatie dat men het huidige leven niet meer kan en wil verder leven. Deze studie reikt handvatten aan naar preventie van suïcide toe onder de vorm van de identificatie van mogelijks therapeutisch aanpakbare factoren: de betekenis van een verlieservaring blijkt zeer relevant te zijn en somatische klachten, slaapproblemen, angst en uitputting waren componenten die leidden tot het subjectief controleverlies.

In het **vierde hoofdstuk** gaan we na, door middel van een kwantitatieve studie met 113 oudere patiënten met een psychiatrisch of somatische aandoening, of bepaalde attitudes tegenover het leven geassocieerd zijn met de aanwezigheid van een doodswens. Resultaten van de studie gaven aan dat het verliezen van een doel in het leven op latere leeftijd een belangrijke factor blijkt te zijn in het ontstaan van een doodswens en dit voornamelijk bij oudere mannen.

Het **vijfde hoofdstuk** buigt zich over de vraag welke rol doodsattitudes en religiositeit spelen in het ontstaan van een doodswens op oudere leeftijd. Uit data van hogervermelde kwantitatieve studie, bleek dat de wijze waarop men de dood percipieerde relevant was voor een doodswens. Zo bleek de aanwezigheid van angst voor de dood negatief geassocieerd te zijn aan de aanwezigheid van een doodswens. Wanneer de dood werd beschouwd als een ontsnappingsmogelijkheid voor het huidige leven, ging dit gepaard met een verhoogde kans op de aanwezigheid van een doodswens. Door de inhoudelijke overlap tussen religiositeit en doodsattituden werd er geen uniek effect vastgesteld van religiositeit op de aanwezigheid van een doodswens. Deze studie geeft aan dat *hoe* de dood door een oudere wordt gepercipieerd deels determineert of hij al dan niet een doodswens heeft.

In het **zesde hoofdstuk** gaan we na of de wens om te leven en de wens om te sterven en de verhouding tussen deze beide kan voorspeld worden op basis van een combinatie van psychiatrische, psychologische, somatische en sociale factoren (derde deel van de kwantitatieve studie). Uit analyse van de data van de studie bleek dat we de patiënten met goede accuraatheid konden indelen in drie verschillende groepen (wens om te leven – ambivalent – wens om te sterven). Een eerste functie – Subjectief Welbevinden – contrasteerde de ouderen met een wens om te leven tegenover de ouderen met een wens om te

sterven, terwijl een tweede functie – Sociale Steun van familie en vrienden – de ambivalente groep onderscheidde van de ouderen met een doodswens. De resultaten geven aan dat een wens om te leven simultaan aanwezig kan zijn met een wens om te sterven bij ouderen. De balans tussen beide blijkt bepaald door het ervaren van subjectief welbevinden en van sociale steun van vrienden en familie. Onze bevindingen herdefiniëren het suïcidaal proces bij ouderen als situerend op een multidimensionaal continuüm.

In een **zevende** en laatste hoofdstuk worden bovenstaande bevindingen gekoppeld aan wetenschappelijke en klinische implicaties. De beperkingen van het onderzoek worden beschreven. Tot slot worden richtlijnen voor toekomstig onderzoek geformuleerd, om te eindigen met een algemeen besluit.

Samenvattend kunnen we stellen dat het suïcidaal proces en suïcidaliteit op oudere leeftijd complex en multifactorieel bepaald zijn. Het doel van dit doctoraatsonderzoek bestond dan ook uit het uitdiepen van de kennis hieromtrent. We slaagden erin psychologische leeftijdsspecifieke correlaten te bepalen van een doodswens (attitudes tegenover het leven, doodsattitudes, ervaring van een disruptief verlies,…) en stelden vast dat *hoe* een levenssituatie of –gebeurtenis wordt beleefd belangrijker lijkt te zijn dat het feit op zich. De verhouding tussen de wens om te leven en de wens om te sterven bleek hierbij van niet-lineaire, complexe aard te zijn.

CURRICULUM VITAE and LIST OF PUBLICATIONS

CURRICULUM VITAE

Anke Bonnewyn was born in 1979, on August 7, in Brussels, Belgium. After her completion of secondary school at the Heilig Hart Institute (Halle), she studied at the Katholieke Universiteit Leuven. She graduated in Clinical Psychology in 2002, cum laude at the Katholieke Universiteit Leuven. In 2002, she started the Postgraduate Studies in Marital, Family and System Psychotherapy, from which she graduated in 2006 (Katholieke Universiteit Leuven). Since 2002, she is employed as a clinical psychologist-psychotherapist at the University Psychiatric Centre (UPC) of the KULeuven - department of Old Age Psychiatry. In 2002-2008, she was affiliated with the ESEMeD project (European Study of the Epidemiology of Mental Disorders) as a statistician-researcher. She started this PhD-project in 2009, Leuven, Belgium.

LIST OF PUBLICATIONS

Papers from this thesis submitted or published in international peer-reviewed journals

1. **Bonnewyn A**, Shah A, Bruffaerts R, Demyttenaere K. Are religiousness and death attitudes associated with the wish to die in older people? International Psychogeriatrics 2015: 187: 66-72.

2. **Bonnewyn A**, Shah A, Bruffaerts R, Demyttenaere K. Are gender and life attitudes associated with the wish to die in older psychiatric and somatic inpatients? An explorative study. International Psychogeriatrics 2015: 26(10):1-10.

3. **Bonnewyn A**, Shah A, Bruffaerts R, Schoevaerts K, Rober P, Van Parys H, Demyttenaere K. Reflections of Older Adults on the Process Preceding Their Suicide Attempt: A Qualitative Approach. Death Studies 2014: 38(6-10): 612-618.

4. **Bonnewyn A**, Shah A, Demyttenaere K. Suicidality and suicide in older people. Reviews in Clinical Gerontology 2009: 19(4):271-294.

5. **Bonnewyn A**, Shah A, Bruffaerts R, Demyttenaere K. Factors determining the balance between the wish to die and the wish to live in older adults. An explorative study. Accepted for publication in International Journal of Geriatric Psychiatry.

Publications in international peer-reviewed journals

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DANKWOORD

DANKWOORD

Vooreerst wil ik mijn oprechte dank uitdrukken aan Prof. Koen Demyttenaere. Beste Koen, vooreerst hartelijk dank dat ik door jou het voorrecht heb (gehad) om naast het klinische werk mij ook te kunnen verdiepen in het wetenschappelijk onderzoek en dit in al zijn rijkheid. Ik heb de kans gekregen om, aanvankelijk in de context van het ESEMeD-project, mij bij te scholen in de statistiek, in het wetenschappelijk schrijven, in het kritisch wetenschappelijk denken. Maar vooral, je hebt voor mij de opportuniteit gecreëerd om een doctoraatsonderzoek van scratch te mogen opzetten en uitvoeren, over een klinisch relevant thema, specifiek voor ouderen, en ik besef dat dit allerminst een evidentie was. Hoewel ouderenpsychiatrie en –psychologie niet je 'core' business is, ben je mij blijven verbazen met je relevante, kritische en creatieve commentaren en suggesties tijdens alle fasen van het doctoraatsproces. Dank!

I wish to express my gratitude to my co-promoter Prof. Ajit Shah. Thank you for your time devoted to this project. Your availability and support are much appreciated. Your suggestions and comments on the setup of the project, the manuscripts and the thesis itself, have led to a higher quality of this thesis.

Mijn oprechte dank gaat ook uit naar Prof. Ronny Bruffaerts. Beste Ronny, sinds mijn start in de onderzoekswereld, was je als collega steeds aanwezig. Je was steeds beschikbaar, laagdrempelig bereikbaar. Zowel op statistisch als inhoudelijk vlak heb je mij vaak gestuurd en ondersteund. Dank voor alles wat ik van je heb kunnen leren, maar ook voor de aanmoedigingen tijdens het hele doctoraatsproces, maar zeker tijdens de laatste, zware loodjes.

I wish to express my gratitude to the members of the jury, prof. dr. Tournoy, prof. dr. Vandevelde, prof. dr. De Donder, prof. dr. Katona, for the critical reading of the manuscript and the constructive comments and suggestions which helped improve the quality of this thesis.

Voor de kwalitatieve studie heb ik ondersteuning gekregen van Prof. Dr. Peter Rober, Katrien Schoevaerts en Hanna van Parys, waarvoor dank.

Een woord van dank gaat ook uit naar Ely Lilly België. Dankzij de toekenning van de Lily Leerstoel Biologische Psychiatrie aan mijn promotor Prof. Demyttenaere, is dit doctoraatsonderzoek tot stand kunnen komen.

Mijn dank gaat ook uit naar de verschillende afdelingen waar de patiënten verbleven en de supervisoren die het mogelijk maakten om patiënten te includeren: Depressie bij Ouderen/CICo UPC campus Leuven (Dr. Broekaert), Afdeling Geriatrie UZ Leuven (Prof. Dr. Tournoy), Afdeling St. Goedele UPC campus Kortenberg (Dr. Bouckaert), Afdeling Algemeen Interne Geneeskunde UZ Leuven (Prof. Dr. Blockmans), Medisch Centrum Munsterbilzen (Dr. Peeters), Afdeling Ter Linden, PZ Broeders Alexiaenen Tienen (Dr. Haekens).

Dank aan de thesisstudenten, Lene Baumans en Silke Verhoeyen, voor hun hulp bij de dataverzameling.

Dank aan Luc Van de Ven, Dr. Dorine Broekaert en Prof. Vandenbulcke, dat ik vooreerst de faciliteiten heb gekregen om mijn wetenschappelijke bezigheden te combineren met het klinisch werk, echter ook voor de inhoudelijke input gedurende de afgelopen jaren.

Dank, Joris Vandenberghe, voor de inhoudelijke input in het kader van het schrijven van het discussiehoofdstuk. Bedankt ook, Els Pazmany, om mij mee te loodsen door heel het praktische proces van het doctoraat. Dank ook aan Fairuz Renaer en Patricia Van Herlé voor de administratieve ondersteuning in de afgelopen maanden.

Ik wens ook diegenen te bedanken die van dichtbij of van ver, op directe of indirecte manier, betrokken zijn geweest tijdens dit gehele doctoraatsproces: mijn collega's op de afdelingen DBO, S&C, CICv en CICo, mijn ex-labogenoten op de roze pijl. Dank aan mijn collega's vanop CIC voor het 'containen' van de stress in de maanden voorafgaand aan de verdediging en de aanhoudende, zo geappreciëerde aanmoedigingen. Dank ook aan Wouter en Patricia voor de hulp met de layout van het thesisboek.

Grote dank tenslotte aan mijn familie voor de steun, in al zijn aspecten, aan mezelf en mijn gezin tijdens de voorbije jaren: Zonder jullie hulp zou de eindmeet onbereikbaar zijn geweest…

Gedurende de jaren waarin ik mezelf verdiepte in de wens naar de dood, stond ik zelf volop in de uitbouw van mijn leven. De paradox kon soms niet groter zijn…. Mijn leven werd ons leven, Kim. Fiona en Gilles werden geboren. Ik ben ons gezin dan ook heel dankbaar om de kans te creëren dit doctoraat te kunnen voltooien, en dit in de hectiek van de voorbije jaren. Onzegbaar veel dank, Kim, voor je geduld, je steun, je liefde. Onbeschrijfelijk veel dank, Fiona en Gilles, gewoon om er te zijn.

FACULTY OF MEDICINE
DEPARTMENT OF NEUROSCIENCES
PSYCHIATRY DIVISION